

MUNICIPAL JOURNAL

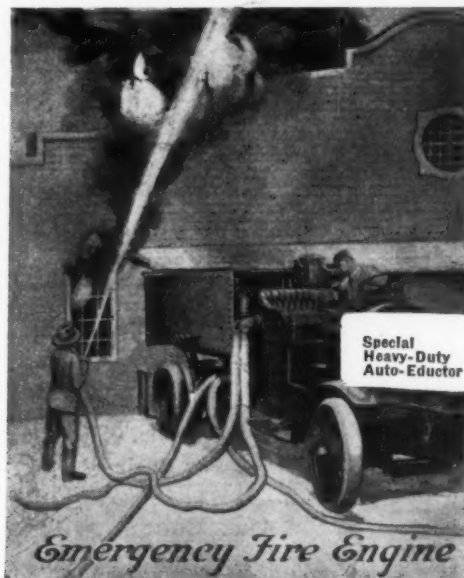
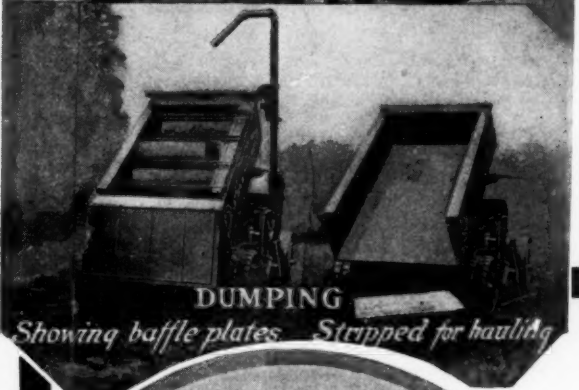
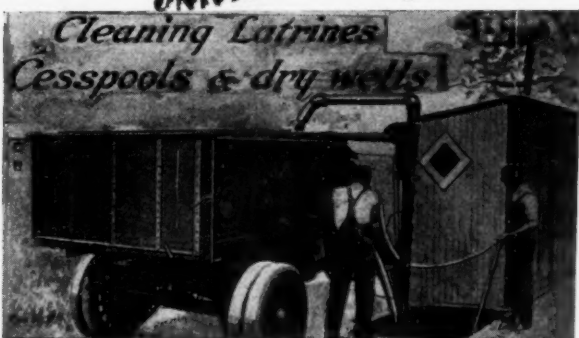
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No. 24

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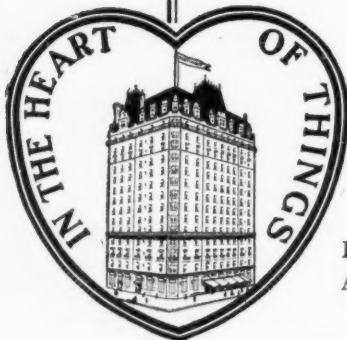
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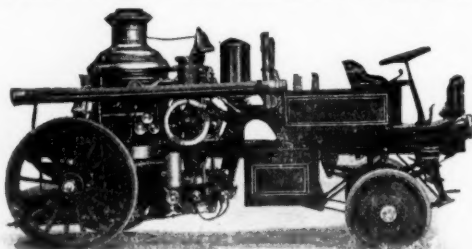
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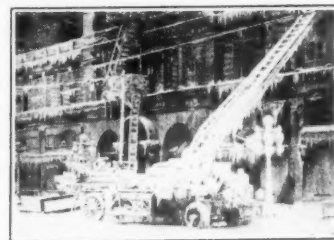
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Volume XLV

NEW YORK, DECEMBER 14, 1918

No. 24

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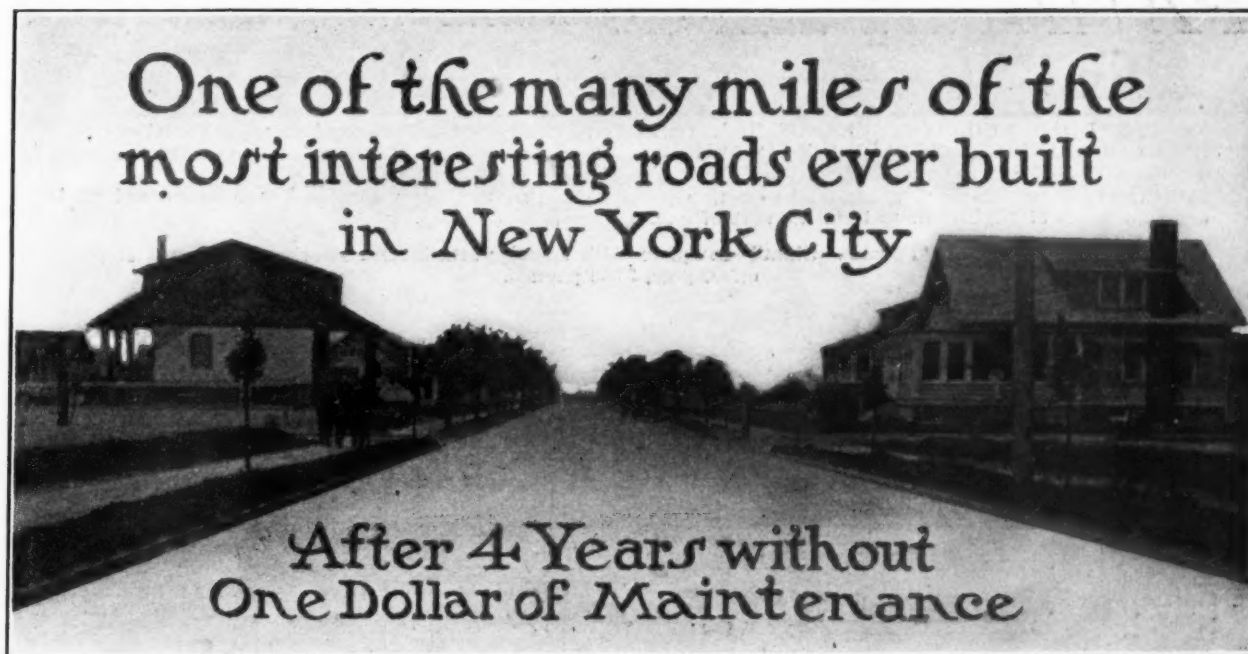
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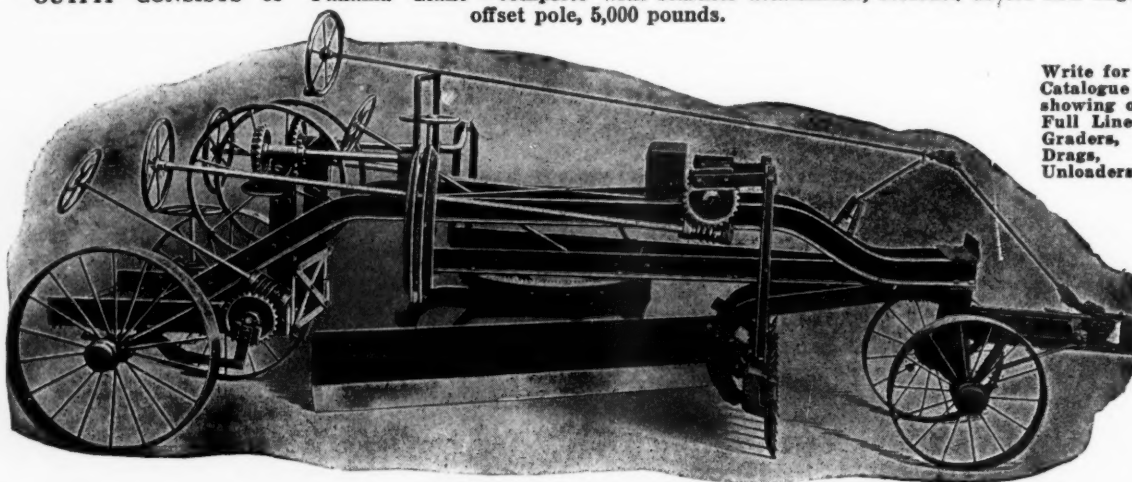
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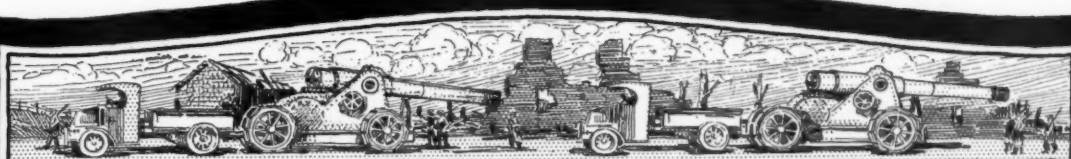
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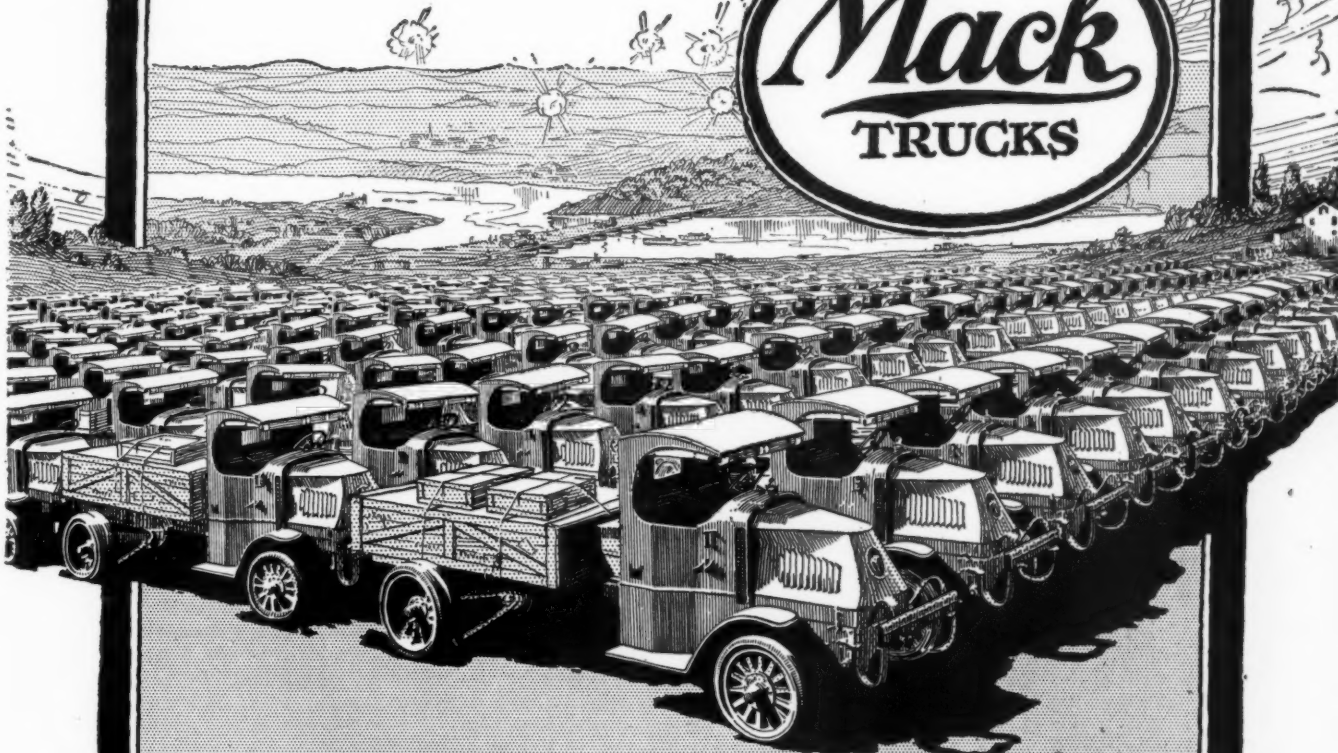
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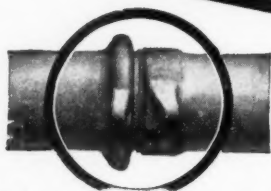
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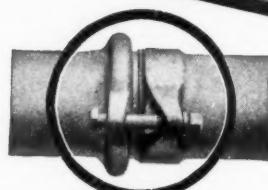


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Municipal Journal

Volume XLV.

NEW YORK, DECEMBER 14, 1918

No. 24

PITTSBURGH GARBAGE DISPOSAL REPORT

Recent Information Concerning Methods at Baltimore, Chicago, Cincinnati, Cleveland, Kansas City, Milwaukee, Minneapolis, New York, Philadelphia, St. Louis, St. Paul and Washington—Methods Recommended for Pittsburg.

Under date of September 9, 1918, a report was submitted to the mayor and council of Pittsburgh, Pa., by a committee that had been instructed "to investigate and report on methods of garbage and rubbish collection and disposal, together with such costs as were available in other American cities." This committee consisted of John A. Sauer, superintendent of the Bureau of Sanitation, F. P. Booth, of the Division of Investigation, and J. C. Slippy, chief of Bureau of Costs.

The report contained a brief statement of the methods employed at a number of cities as learned by the investigators, comments and recommendations by the committee, and extracts from a bulletin on garbage utilization issued by the U. S. Food Administration. The last has already been given in Municipal Journal and is omitted. We have also omitted detailed costs and accounts of the Cleveland reduction plant because of the space that they would require. With these exceptions, and omitting the introduction, the report of the committee is as follows:

Baltimore—The city of Baltimore collects its own garbage, ashes and rubbish, and pays a private contractor for reducing the garbage. In the early part of 1918, Walter E. Lee, water engineer of Baltimore, was directed by the Board of Estimate to visit different cities and make recommendations for improvements in the service. The outstanding features of Mr. Lee's report were that rubbish should be disposed of by incineration, incinerators being established in several sections of the city, and that the city dispose of its garbage by contract, for reduction. The highest bid received was \$23,000 per year, and the city decided to build its own reduction plant, entering into a contract with the Cobwell Corporation of New York. The Capital Issues Committee at Washington then intervened in the matter, and, on the ground that the adoption of either of the above plans would leave the present contractor's plant idle, requested the city to defer the construction of its plant for the period of the war, and continue the old contract (paying \$75,000 per year for reduction).

The cost of collection of garbage is not kept separately, the collection of garbage, ashes and rubbish being performed by the Department of Street Cleaning at a total cost of approximately \$225,000 per year, the total cost for collection and disposal of all city refuse being about \$300,000 per year.

Men on collection wagons are paid \$3.25 per day for eight hours, one man being employed to each wagon. The city is divided into four districts with a stable in each and in charge of a superintendent, each district being subdivided into routes. Reduction Company removes dead animals.

Chicago—The collection of garbage in Chicago is per-

formed by city force under the ward system, a ward superintendent in each ward being held responsible for conditions in his district. Thirty-five inspectors, one for each ward, look after garbage complaints. The garbage must be accessible to the collector and if not properly separated, the Health Department makes the householder remove it at his own expense. Two men are employed for each collection wagon and are paid \$3.00 per day of eight hours, and \$8.00 per day is paid for team hire if driven by owner or his employee, the garbage wagon being furnished by the city.

Collections are not made from all hotels, as many of these sell their garbage to a private collector engaged in hog feeding. A private corporation pays the city \$28,000 per year for the privilege of removing dead animals.

The average cost per ton for collection in 1917 was \$3.42, and for the first six months of 1918 this figure was \$3.50.

The reduction plant was acquired by the city through condemnation proceedings, several years ago, and additional machinery has been added from time to time. For this reason the plant is not as efficient as one constructed under a complete scheme and engineered to meet all the necessities with a view of minimizing production costs.

In 1917, 4,023,480 pounds of grease and 22,680 tons of tankage were produced, the average price received for these products being \$.0757 per pound for grease and \$10.27 per ton for tankage, due to sale as a whole under annual contract. Prices for the five months beginning August 1, 1918, will be \$.1157 per pound for grease, and \$16.85 per ton for tankage. The production of grease for 1918 has fallen 20% under that for 1917. It was stated by the engineer in charge that, in spite of this decrease, the reduction plant would show a profit of \$47,000 for the first six months of 1918 on reduction, without municipal overhead or interest on investment charge or plant depreciation.

Analysis made in 1918 shows that a ton of raw garbage contains the following:

- 2.00% grease.
- 22.65% tankage.
- 75.35% moisture and rubbish.

Tests show that the grease produced in the plant contains 8% glycerine.

A very complete cost-keeping system is used by the Bureau of Streets, and the costs given are accurate but do not include interest and depreciation on the plant investment. The preliminary system of handling raw garbage in this plant is not considered sound practice by others in the work, as the garbage is first submitted to a hot air dryer, only the steel sheets on the revolving

METHODS AND COST OF GARBAGE COLLECTION AND DISPOSAL IN AMERICAN CITIES—1917.

City	Population*	Area Sq. Mile	Population per Sq. Mile	By Whom Collected	Number of Separations	Frequency of Collection	Location of Containers
Baltimore	589,621	32	18,425	City force	Three— 1—Garbage 2—Rubbish 3—Ashes	Daily to twice weekly	Accessible place in yard
Chicago	2,497,722	198	12,615	City force	Three— 1—Garbage 2—Rubbish 3—Ashes	Daily to once a week	Inside of gate on alley or on curb
Cincinnati	410,476	72	5,701	Contract	Two— 1—Garbage 2—Ashes and rubbish	Twice a week. Once a week in suburbs	Within 20 feet of sidewalk or inside alley gate
Cleveland	674,073	53	12,718	City force	Three— 1—Garbage 2—Ashes & rub. 3—Waste paper and rags	Residences once a week. Hotels three times a week	Rear yard
Kansas City.....	300,215	61	4,921	Contract	Two— 1—Garbage 2—Ashes & rub.	At least twice per week	Alley line
Milwaukee	436,535	36	12,125	City force	Three— 1—Garbage 2—Rubbish 3—Ashes	Once a week	Near alley line
Minneapolis	363,454	54	6,730	City force	Two— 1—Garb., Ash. 2—Ashes & rub.	Once a week	Near alley line
Philadelphia	1,709,518	130	13,150	Contract	Three— 1—Garbage 2—Rubbish 3—Ashes	Daily to twice a week	Near alley line
Pittsburgh	579,090	41	14,124	Contract	Two— 1—Garbage 2—Rubbish	Business— Daily; Res. 1 to 3 per week Every other day	Accessible place in yard 5 ft. of alley gate. Curb line if no alley
St. Louis	760,454	61	12,466	City force	Garbage	Twice a week	Accessible place in yard
St. Paul.....	247,232	55	4,495	City force and il- censed collectors	Three— 1—Garbage 2—Ashes 3—Rubbish	Daily to twice a week	Near alley line
Washington	366,631	70	5,237	Contract	Three— 1—Garbage 2—Ashes 3—Rubbish	Daily to twice a week	Front house line
New York—Boroughs of Manhattan, Bronx and Brooklyn.....	5,138,352	..	....	City force			

*Population given estimated by Bureau of Census as of middle of fiscal year.

drums being between it and the flames, thus carbonizing a percentage of the grease and tankage into inert and practically valueless matter.

Cincinnati—Garbage collection and disposal in Cincinnati is performed by a private contractor under a lump sum contract, this contract expiring December 1, 1918.

Two men employed on each collection wagon. The city pays \$3 per day for drivers and \$2.75 per day for helpers on ash collections, and the contractor probably pays the same rate for garbage collection.

The amount of garbage for 1917 estimated at 48,000 tons.

The contractor was out of the city at the time of our visit so that it was impossible to secure any data relative to reduction or permission to visit the plant. Dead animals must be removed by contractors on notice.

Cleveland—The city of Cleveland collects its own garbage and operates its own reduction plant at Willow, Ohio.

The district system of collection, similar to the ward system in Chicago, is used. The average length of haul to the loading stations is now from 4 to 6 miles. The construction of four loading stations, now planned, will reduce the length of haul to 2 miles, and cut the cost of collection accordingly.

One man is employed on each collection wagon, being paid \$3.75 per day.

In 1917, 3,071,022 pounds of grease and 6,241 tons of tankage were produced from the garbage. This is sold under an annual contract, the prices received being \$.135 per pound for grease and \$18.82 per ton for tankage. In May, 1917, the garbage yielded 3.23% of grease. In May, 1918, this percentage had fallen to 2.57%. The average cost for collection and disposal during 1913 to 1917 was \$1.76 per ton.

A few years ago, the city of Cleveland had an appraisal

made of all city property and this appraisal was written up in the Auditor's books and kept under control currently, maintenance costs being charged as such and depreciation being written up yearly. The effect of this system is to place the accounts of the city, particularly those bureaus which are entirely or in part self-supporting, on the same basis as that of a private corporation.

The Cleveland city plant differs from that of Chicago in that the raw garbage is immediately placed in high tanks called digesters, and cooked under steam pressure, thus eliminating the deterioration in quantity and quality of the subsequent products, although the balance of the operation is more complicated and cumbersome, and makes a slightly higher reduction cost based on the amount of raw garbage handled than does the system in use in Chicago.

Kansas City, Mo.—Kansas City pays \$57,000 per year to a private contractor for removal and disposal of garbage, 53,000 tons alleged to have been collected last year, but your committee believes this too high as compared with other cities and estimates the same as 45,000 tons on the comparative table. The contractor feeds the raw garbage to hogs on a ranch located near the Kansas City Stock Yards. This contractor, C. Rhea, also operates hog feeding ranches at Nashville, Tenn., and Camp McClellan (Anniston, Ala.)

The Kansas City contract is for three years and calls for at least two collections per week from residences, and one per day from hotels, hotels and restaurants being permitted to sell their garbage to the contractor. No other person is allowed to collect garbage, although the contractor can sublet districts to other collectors. A bond of \$25,000 is furnished to the city by the contractor.

The drivers of the collection wagons are paid \$2.75 per day, only one man being employed on each wagon.

METHODS AND COST OF GARBAGE COLLECTION AND DISPOSAL IN AMERICAN CITIES—1917 (Continued).

City	Time of Collection	Average Length of Haul, Miles	Grades	Amount Collected		Cost of Collection		
				Tons	Lbs. Per Capita	Total	Per Ton	Per Capita
Baltimore	Residences Day Business Night	1.6	Average 4%	62,300	211	Approx. \$225,000 for garbage, ashes and rubbish	...	....
Chicago	Day	3	No	100,146	80	\$342,499.32	\$3.42	\$0.13
Cincinnati	Day	..	Average 6%	Est. 48,000	233	\$73,960.00 includes disposal	...	....
Cleveland	Day	4 to 6	No	56,121	166	\$235,302.76	4.20	.34
Kansas City	Night	3	Average 5% & 6%	Est. 45,000	299	\$57,000.00 includes disposal	...	....
Milwaukee	Night	4½	No	30,975	141	\$129,378.00	4.18	.29
Minneapolis	Day	2	Few	20,834	114	\$80,815.18	3.87	.22
Philadelphia	Night or Day	3	No	Est. 125,000	146	\$432,000.00 includes disposal	...	....
Pittsburgh	Not specified	Estimated 6	Average 8%	83,013	286	\$186,779.25 includes disposal	...	....
St. Louis	Day	4¾	Max. 5%	45,136	118	\$131,121.00	2.90	.17
St. Paul	Day	8	Max. 5%	14,628	118	\$43,902.13	6.08	.17
Washington	Day	4	No	7,215 by city 44,683	243	\$69,840.00 includes disposal	...	....
New York, Boroughs of Manhattan, Bronx and Brooklyn	Day	2	No	403,665	157	Costs not available	...	....

METHODS AND COST OF GARBAGE COLLECTION AND DISPOSAL IN AMERICAN CITIES—1917 (Continued).

City	Method of Disposal	Cost of Disposal	Revenue from By-Products	Net Cost of Disposal		
				Amount	Per Ton	Per Capita
Baltimore	Reduction by Contract	\$75,000	.....	\$75,000.00	\$1.20	\$0.12
Chicago	Reduction by City	\$456,523.40 \$4.559 per ton	\$426,378.85 \$4.249 per ton	\$30,144.55	.31	.012
Cincinnati	Reduction by Contract	\$73,960 includes collection	.....	.....	...	....
Cleveland	Reduction by City	\$191,001.09 \$3.40 per ton	\$292,012.96 \$5.20 per ton	\$101,011.87 net revenue	1.80 rev.	.14 rev.
Kansas City	Fed to Hogs by Contractor	\$57,000 includes collection	.....	.....	...	....
Milwaukee	Incineration by City	\$47,391.75	.....	.....	1.53	.10
Minneapolis	Incineration by City	Estimated \$47,000	Estimated \$27,000	Estimated \$20,000.00	.95	.05
Philadelphia	Reduction by Contract	\$432,000 includes collection	.....	.....	...	....
Pittsburgh	Reduction by Contract	\$186,779.25 includes collection	.....	.....	...	....
St. Louis	Reduction by Contract	\$39,268.66	.....	\$39,268.66	.87	.05
St. Paul	Sold to hog feeders	.....	\$7,587.17	\$7,587.17 net revenue	...	....
Washington	Reduction by Contract	\$69,840 includes collection	.....	.....	...	....
New York—Boroughs of Manhattan, Bronx and Brooklyn	Reduction Contract	.....	\$120,000	.....	...	....

Sixteen inspectors attached to the Department of Health look after garbage complaints, but city officials stated that they were getting good service.

When told of the amount of garbage produced in Pittsburgh, Mr. Rhea said that this would be sufficient to keep a drove of 5,000 hogs on hand and feed out or put 150 pounds of pork on 20,000 hogs during the year.

At the Kansas City ranch, garbage is fed on concrete slabs, these being washed each morning. No more odor is evident in this ranch than that common to the ordinary stockyard. The hogs used are first inoculated against hog cholera, the contractor averring that, in this operation, he lost 5% of the number treated. St. Louis, as a municipality, tried this experiment of hog feeding with garbage for a short time, but it was not wholly successful. Reduction plant pays 3c per pound for dead animals.

Milwaukee—The municipality owns and operates incinerator and collects garbage, ashes and rubbish. Teams were secured for \$4.50 per day in 1917, but the 1918 rate has increased to \$6.00 per day. Collections are not made from hotels, these selling to private collectors who use it for hog feeding. It was stated that the ordinary household garbage carried an extremely small percentage of grease. Twenty-six inspectors look after complaints. In 1917, 46,979 tons of mixed refuse were burned at the incinerator at a total cost of \$72,079.07, or \$1.53 per ton. This per ton cost is applied to the total tons of garbage collected in arriving at the cost of incineration given. Steam is generated at the incinerator and furnished to the Milwaukee River Flushing Station, but no account

of the value of this is considered in the costs shown in the table.

Milwaukee requires the householder to wrap all garbage in paper and place where immediately accessible for collection. The garbage wagons bearing these paper-wrapped parcels were not noticeable for odor from the sidewalk, and that factor was only discernible on closely approaching the vehicle. From the standpoint of unobjectionable service, this condition was only equalled in other cities where the garbage was similarly handled. Unfortunately, the system is fatal from a reduction standpoint, the paper absorbing so much of the grease; and there is no method for removing it, and, in addition, the labor entailed in unwrapping makes it out of the question. This city, by reason of the national policy of conservation, is under pressure from Washington to either take up hog feeding or reduction, so that its incineration of garbage will eventually have to be abandoned. Dead animals are removed by city force.

Minneapolis—Up to 1918, the city of Minneapolis disposed of its garbage by incineration, conducting both operations, collection and incineration, with the city force. In the early part of this year, the city let a contract to the Reservoir Heights Pig Feeding Company to take all the garbage delivered by the city f.o.b. cars at the central loading station, and pay the city \$1.26 per ton delivered, the city using the paper-wrapped method of collection. For collection purposes, the city is divided into 34 districts, a collector in each district being held responsible for the work in his district. Two

men are employed on each wagon, the collector being paid \$130 per month for his service with the team, and the helper, \$2.80 per day for 8 hours, the city owning the wagons. The collectors haul their loads to three-sub-stations, and from these points the garbage is taken by wagon and trailer to the loading station. Collections are made from residences only, the hotels selling their garbage to private collectors.

The Minneapolis garbage is handled in a manner similar to that of Milwaukee, the householder being required to drain and wrap it in paper before it is placed in the cans. No tin cans, crockery or glass are allowed in the cans, the Health Department looking after proper separation.

The cost of collection given in the table was taken from the books at the loading station. Exact figures as to the cost of incineration were not complete for 1917, those given being estimated by the engineer from his 1916 cost sheet. An analysis of the garbage made in 1917 in all city wards showed that it contained only 1% grease. Dead animals are owners' property and sold by them.

New York—The collection of garbage in the three boroughs of Manhattan, Brooklyn and The Bronx in the city of New York is under the jurisdiction of the Department of Street Cleaning. It was stated that exact figures of the cost of collection in 1917 were not yet available.

The contract for disposal of garbage was with the Metropolitan By-Products Co., the contractor to pay the city the first year \$120,000 with an increase of \$30,000 per year for the remaining four years. This contract began operation on January 2, 1917, to continue for a period of five years. The new Staten Island plant, using the Cobwell system, started operations in April, 1917, and, in December was receiving all the garbage from Manhattan, The Bronx and Brooklyn. Inability of the contractors to secure labor during the early part of 1918 resulted in the plant being taken over by the city and operation will be continued under U. S. Government supervision.

Philadelphia—The collection and disposal of garbage in Philadelphia is performed under lump sum annual contract, the amounts for the last few years being as follows:

1917.....	\$432,000.00
1918.....	575,256.00
1919.....	486,000.00

No check is kept on the amount of garbage collected, except that the total amount collected during some month is weighed and thus used as the average. Inspectors keep close watch on complaints, being required to turn in a report on the complaint of 48 hours after its receipt. The contractor is fined \$1.00 per day for each house which he fails to collect from.

St. Louis—Garbage is collected in St. Louis by city force and delivered to a contractor at dumps on barges and is then transported to the reduction plant at their expense. The city pays \$.87 per ton to the contractor for disposal and the contractor stated that he was willing to renew at that figure but would not accept less or pay any bonus for it.

The district system, similar to that of Chicago, is used in collection. One man is employed on each wagon, he being paid \$75 per month for 8 hours per day. The average length of haul to the dumps is, at present, $4\frac{1}{2}$ miles, but the engineer stated that, by the construction of loading stations, this could be cut to $2\frac{3}{4}$ miles. Four inspectors attached to the Department of Streets and Sewers, look after complaints. The figures given in

the table are those for the fiscal year ending April 9, 1917, later data not being available.

St. Paul—About half of the garbage in the city of St. Paul is collected by the city, and the balance by 54 licensed collectors who pay a license fee of \$5 each per year. Garbage collected by the city is delivered to hog farms just outside the city limits, selling at an average from \$1 to \$1.25 per ton.

Teamsters on city collection are paid \$100 a month, they furnishing the teams and running gear while the city furnishes the wagon boxes. City wagons are provided with an opening for draining each load before it is delivered to the contractor.

The length of haul is much greater in St. Paul than the average city, as the garbage is hauled about two miles further out of the collection districts than would be required if some other system of disposal were adopted.

There is no regular collection of refuse and ashes, the householder being required to dispose of these by having them hauled away by the licensed scavengers at his expense.

Washington—Up to July 1, 1918, garbage in Washington was collected and disposed of under a lump sum contract. A bid of \$143,400 for the collection and disposal of garbage for 1918-1919 was accepted, but the contractor forfeited his deposit made as a guarantee that he would enter into this contract if his bid was accepted, and the District of Columbia purchased the plant and is now doing the work by city force. The plant is estimated to have a value of \$180,000, but was purchased for \$85,000.

One man is employed for each wagon, he being paid \$3.62 $1\frac{1}{3}$ per day for eight hours.

(To be Concluded)

FRANKFORD CREEK, INTERCEPTING SEWER

Some Unusual Features of Work in Philadelphia— Grit Chamber—Overflow Chamber—Pressure Conduit—Sewer Laid on Surface.

In accordance with the plans for collection, treatment and disposal of the sewage of Philadelphia, as adopted two or three years ago, the Bureau of Surveys is constructing what is known as the Frankford Creek High Level Intercepting sewer, this work having been continued in spite of war conditions, as a necessary health measure to protect the water supply.

The part of this sewer under construction for the past year or two is 15,700 feet long. Along the line are a grit chamber and storm-water overflow, and an inverted siphon or pressure conduit. The completion of this sewer and of the treatment works will prevent the discharge of the sewage of about 100,000 persons from Germantown and contiguous parts of the city into Frankford creek, and the removal from the sewage at the treatment works of practically all the solid matter in it capable of settlement, thus keeping this polluting matter out of the Delaware river and discharging the liquid about two miles farther down stream from the mouth of Frankford creek and the city water supply intake.

The construction of the sewer has been divided into eleven main sections, in order to facilitate the work. The first section consists of 4,475 ft. of concrete sewer 8 ft. 6 in. wide and 8 ft. 6 in. high, semi-elliptical in form; grade 0.06 per cent; capacity 160,000,000 gallons a day flowing two-thirds full. This is twice the estimated average dry-weather flow in 1950. Elsewhere in the city 141 per cent is used, but the increase in this sewer was to afford additional protection to two creeks that receive the storm overflow, since they flow through land

designed for use as parks. Three stretches of this section were in tunnel, one 500, another 707 and the third 1278 feet long.

The first section ends at an overflow chamber that was completed about a year ago. This chamber is a rectangular reinforced concrete structure 8 ft. wide by 8 ft. 6 in. high, along one side of which is an overflow weir which is to be raised from year to year so that storm flows in excess of 141 per cent of the daily average dry-weather flow will pass over it into a 6 ft. 6 in. by 7 ft. 6 in. rectangular sewer, which will conduct it to a screen chamber. The sewer is enlarged to 8 ft. circular at the outlet to reduce the velocity of the discharged sewage and minimize erosion of the banks of the creek receiving it. This overflow outlet sewer also receives the flow of an underdrain that was built under the intercepting sewer.

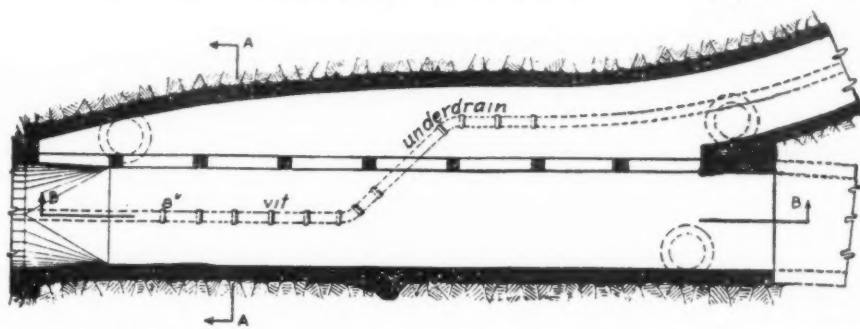
A grit chamber is provided at this point for the purpose of removing sand and debris from the sewage before it enters the inverted syphon. As the neighborhood will be residential, the aim is to make the grit chamber an ornament rather than a detriment. With this end in view, the entire grit chamber will be underground and roofed over, being lighted by sidewalk lights in the roof. The roof is surrounded by an attractive balustrade. At one corner, supported on the roof, will be an administration building of pleasing architectural design, and the block of ground in the center of which the grit chamber is placed will be parked and thrown open for public use.

The chamber is 63 feet 6 inches by 156 feet inside measurements, with the invert of the inlet sewer 18 feet below the present surface, which will be raised about three feet in improving the area. At the inlet end is an inclined bar screen with 9-inch spacing to intercept large floating objects. Beyond this, the inlet divides into three channels, in each of which will be placed a cage screen with 2½-inch clear openings made by two rows of staggered bars. The screenings will be pressed and destroyed in an incinerator. Beyond each screen is a grit chamber 12½ ft. wide and 60 ft. long, the lower part of the side walls being heavily battered so as to produce a flow of very nearly one foot per second no matter how small the volume flowing. In the outlet to each

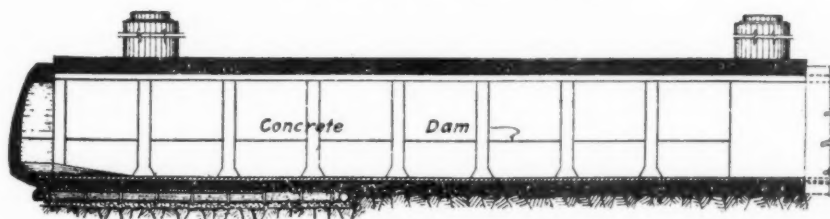
of these channels is placed a regulating device for manually controlling the surface elevation of the water and thus regulating the velocity.

The bottom of each grit chamber is depressed 15 in. below the invert of the inlet sewer to provide the space in which the sand may accumulate. The sand collecting here will be removed from each of the compartments by means of a centrifugal pump dredge mounted on a platform which travels the entire length of the chamber. The detritus so removed will be conveyed by overhead troughs to settling and washing tanks where it will be cleaned, the dirty wash water being returned to the sewer just above the grit chamber. The washing will be performed by means of a grid of pipes in the bottom of the tank, either water or air being used for washing, as in the case of water filters of the rapid sand type. When washed sand has accumulated to a sufficient depth, it will be removed by a grab bucket attached to a crane running above the tanks and will be deposited in trucks to be hauled to the disposal plant for use as a top coating on the sludge-drying beds. A sand storage bin is provided to hold sand during times when it may be impracticable to remove it at once on account of weather conditions or other causes.

For 1,105 feet beyond the grit chamber is another stretch of gravity sewer having the same shape as that first described except that the height increases from 9½ feet at the upper end to 11½ feet at the lower. At the end of this stretch begins the pressure conduit or inverted syphon. (The topography of the country is such that a continuation of the sewer as a gravity sewer would necessitate laying it about on the street surface.) There will ultimately be three pressure conduits, 5 feet 6 inches, 6 feet 6 inches and 7 feet 6 inches in internal diameter, respectively. The pressure conduits have a total length of 7,000 feet, and are arranged to deliver the sewage at elevation 16 at the treatment works. At first, however, the conduit will act as an ordinary sewer not under pressure, except possibly at the upper end, and will deliver sewage to the work at elevation 4. The reason for this is that elevation is sufficient to allow the sewage to flow through sedimentation tanks only and discharge to the river by gravity, which is the only treatment contemplated for the immediate future; whereas a lift to 16 will be necessary if trickling filters are used, as may become necessary later. Such elevations of inverts and gra-

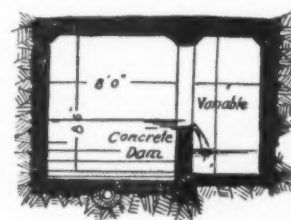


PLAN OF OVERFLOW CHAMBER.



LONGITUDINAL SECTION BB.

PLAN AND SECTIONS OF OVERFLOW CHAMBER.



CROSS-SECTION AT A. A.

dients were used in designing the pressure conduits as will permit them to serve either purpose. In order to provide space for the three conduits, it was necessary to widen to 70 feet the streets through which it passes, and to raise the grade of one of them in order to provide a minimum cover of four feet. The construction of them also necessitated the raising of the water mains in one of the streets crossing the conduits.



SIXTY-SIX INCH CONCRETE PRESSURE CONDUIT LAID ON THE SURFACE IN WHEATSHEAF LANE.

The pressure conduit was constructed of reinforced concrete pipe with copper expansion joints, made by the Lock Joint Pipe Company. The pipes are 5 feet 6 inches internal diameter and $6\frac{1}{2}$ inches thick, reinforced with two layers of American Steel and Wire Company's triangle mesh. The concrete is mixed $1:1\frac{1}{2}:2\frac{1}{2}$. Pipes were made in 8-foot length for tangents, and in 4-foot length with spigot end beveled for use on curves. In the spigot end of each pipe a band of 12-ounce copper was cast, half the width protruding, with a crimp to allow for expansion. The spigot end of the pipes containing the band was painted with asphalt.

The city purchased 6,552 lineal feet of this pipe, for which it paid \$58,948. The pipe was laid under a separate contract by the Whiting-Turner Construction Company. The pipes were laid upon a concrete foundation, ordinarily in minimum cradles extending 21 inches above the outside bottom of the pipe; but where passing under streets subject to heavy loadings and with a shallow earth cover, the maximum cradle was used extending to the outside top of the pipe. About 500 feet of this sewer lies beneath the 32 tracks of the Pennsylvania railroad.

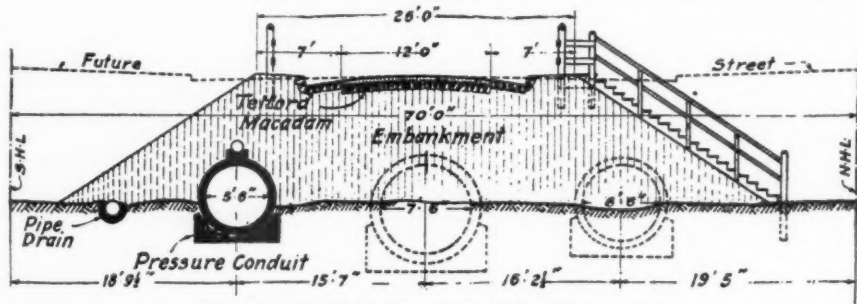
After the pipes were placed on the foundation true to line and grade, the outside of the joint was plastered with mortar and the joint space thoroughly cleaned and plastered from the inside for the lower 120 degrees. A hole was then broken in the upper part of the bell end and after a steel band had been placed snugly against the inside of the pipe, the upper part of the joint space was thoroughly filled with 1:1 carefully screened grout. Afterwards secondary joints were placed upon the inside of the pipes. After a stretch of the line had been otherwise entirely completed, but before the secondary joints had been placed, 540 feet of pipe was submitted to a hydrostatic pressure test of ten pounds per square inch at the lowest point of the center line of the tested section and the leakage was found to be at the rate of 5,800 gallons per mile per day. The specifications called for a leakage under these conditions of not to exceed 20,000 gallons per mile per day.

At intervals of about 500 feet along the sewer, special pressure manholes were provided by making a monolithic concrete section between two pipes, in which section was secured a 24-inch flanged casting, to which is bolted a cover. Surrounding this casting, an ordinary brick manhole was built on top of the monolithic section and provided with a 36-inch cover and frame.

A part of this pipe was laid in Wheatsheaf lane, the original surface of which was about at established grade at the two ends of a depressed section, but in the middle

of such section was about 12 feet below curb height, which had been fixed so as to provide a minimum cover of about four feet over the top of the pipe. Across this depressed section the sewer was laid to grade, thus bringing the bottom of it practically at the ground surface, over a part of the length; and afterward the street was filled up to established grade. There was already in the old road a 12-inch water main, and this was replaced by a new one near the new established surface. It was also necessary to widen the street to provide space for the three conduits, as previously described. The existing macadam pavement was removed and the material used so far as it would go for repaving on top of the new fill. In order to provide secure foundation for the new water main, it was supported on concrete saddles placed on top of the pressure conduits.

A few hundred feet beyond the section just described is the site of the treatment plant. A Venturi meter placed near the plant will permit measurement of the sewage delivered to the plant. The Venturi meter, being



CROSS-SECTION OF WHEATSHEAF LANE.

lower than the outlet, will always be full and under pressure. The treatment works will consist of two-story sedimentation tanks, possibly followed by trickling filters if these should be required. Provision is made in the plant for passing through the tank 60,000,000 gallons a day. In making the plans there was assumed an average retention period of three hours, a capacity of sludge compartment based upon .007 cubic foot of sludge per capita per day and nine months' retention, equivalent to 1.8 cubic feet per capita; and an area of sludge-drying beds equivalent to 0.46 square foot per capita. Contract was let on August 7, 1917, for constructing the first installation of 32 sedimentation tanks and 80 sludge-drying beds, and work on these is now in progress. From the plans for these was excluded all possible appurtenant metal work, such as sludge pipes, valves, railings, industrial tracks, sludge cars, roads, lighting, water pipes, etc., which can be installed under subsequent contracts when metal is less necessary for national purposes and is lower in cost.

MEMORIAL TREES FOR SOLDIERS.

An appeal has been issued to the people of Alabama to plant memorial trees for our soldier dead. It is suggested that black walnut trees be planted along the roadsides, "for in the event of another war in fifty, a hundred or two hundred years hence, the wood from the black walnut trees, so planted, could be utilized in the manufacture of gun-stocks and into propellers for aeroplanes."

If walnut trees are not available, pecans, scalybark hickory, elm, beech, hackberry, linden, sycamore, sweetgum, sugar maple and yellow poplar are suggested. The advantages of road-side trees enumerated in the appeal are that they furnish shade and food; enhance the beauty of the roads and keep them from drying out, raveling and blowing away in dust. The planting of the road-side trees entails very little trouble and expense, says the appeal.

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SIMON BARR, Assistant Editor
CHARLES CARROLL BROWN, Western Editorial Representative

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HASTEN IMPROVEMENTS—BUT PLAN THEM NOW.

With the sudden release of war-time restrictions on manufacture and construction, reports are coming from all over the country of booms in public improvements, and forecasts made by city, county and state officials indicate that 1919 will be the record year for this class of work. Many improvements were postponed patriotically to conserve labor, money and materials and in many communities burdensome conditions have been tolerated in a commendable spirit of war-time sacrifice. And just as citizens and officials proved their patriotism by conservation, so they are proving themselves remarkably alive to the opportunities and necessities of the post-war period. They realize that where patriotism demanded community self-denial it now demands intelligent activity. Labor and materials must be so employed that the men who bring home victory may find work assured them. The official encouragements of President Wilson, the members of the Cabinet and the War Industries Board favoring public works have served to accelerate activities already started.

In fact, there may be some danger that some communities may embark projects which have not been given adequate consideration. Such action may result in economically unsound conditions and perhaps put upon the officials and citizens difficult burdens in the future. For instance, where a new source of water supply is needed, officials should make sure that the source they choose is the best from all standpoints. Where highway improvements are to be made, they should be careful to adopt material and construction which will prove adequate to the traffic conditions. Where, as in many municipalities, some means of collection and disposal of garbage are needed, officials should investigate thoroughly before signing any contract. Similar considerations apply to many other common situations, such as purchase of private utilities by cities and the granting of higher rates. Many cities can use the present time profitably for auditing their books and developing better accounting methods. Cities which have grown abnormally during the

war should be particularly careful in taking action and determining, for instance, the degree of stability and permanence of their new population.

Care does not mean delay—it may prevent future delay. All speed possible should hasten public improvements, but wherever it is advisable large projects should be given adequate study. Little work can be done before spring, in any case, but all that it will be possible to do then should be planned this winter so that there will be no hitch in starting as soon as weather permits. Where projects involve alternatives or situations beyond the regular routine of local officials, expert advice is necessary. The fee needed to retain an expert, whether consulting engineer, accountant or investigator, usually saves many times its cost. Their work of study and planning can be done this winter; then in the spring the community can go ahead with its work with assurance of success.

PUBLIC HEALTH AND PRIVATE PRECAUTION.

A few months ago a significant incident occurred at one of the cantonments. The officer in charge found it necessary to interfere with the treatment that one of the soldiers was receiving from his comrades, who had begun to "treat him rough" to an extent that could not be overlooked. Enquiry developed that the cause of the punishment was the failure of the victim to observe certain of the strict sanitary rules of the camp, and so thoroughly convinced had the soldiers become of the danger that all would incur from the failure of a single individual to observe these rules, that their wrath could hardly have been greater had he been discovered putting poison in their food.

All honor to the officials at this camp who "put across" so effectively the idea of the importance to each member of the universal observance of certain sanitary precautions. If this was possible in a few weeks in the case of cantonments, why should not a similar conviction of the importance of this matter be instilled into the citizens of every community by a campaign of education continuously carried on?

It would seem as though nothing should be more readily appreciable by the average citizen than the fact that his own individual health is a most important matter to him. It will hold in the great majority of cases, although there are of course striking exceptions, that without health no man is able to do his best in any walk of life, whether this best be measured in terms of wage earned or benefit conferred on the community by his activities. To the individual, health has an actual cash value. Not only can a man who has the "pep" that only good health will maintain command a better salary than a less vigorous one, but the expenses of sickness are a very important consideration, as many a head of a family can testify.

But the health of the individual does not depend entirely upon himself. Whether or not he contracts typhoid fever, for example, may depend upon the freedom from this disease of his cook or her family, of the grocer's boy, of the hands on the dairy farm from which his milk comes, and numerous others. Of almost any individual who has suffered from influenza this year it might be said that he would have escaped had not his fellow citizens first contracted the disease. Public health therefore concerns each individual, not merely from an altruistic point of view or because he is "his brother's keeper," but also from a purely selfish point of view, because in public health lies his own safety. Money spent by the individual in that portion of his taxes allotted to an

efficiently operated health board is the cheapest sort of health insurance that he could invest in.

It is only of recent years that the public is beginning to realize the real significance of the expression "an ounce of prevention is worth a pound of cure." No honest citizen would not prefer paying fire insurance premiums under a plan that would prevent fire instead of under one that merely partially remunerates him for loss sustained by fire; and yet, while the latter form of insurance has been universal for years, fire prevention has only during the past few years been accorded the attention that it deserves.

There is considerable similarity between fire and sickness, in that each fire not only means a loss to the owner of the property in question, but also threatens loss to the property of his neighbors likewise; and to a greater or less extent every fire is a loss to the community as a whole. And the same is true of sickness.

Hospitals, free clinics and other agencies for the curing and ameliorating of disease are excellent charities, but they are little more than that; they benefit the community as a whole just as the fire department benefits it—they do not eliminate the danger but merely tend to minimize and confine its effects. So long as there are cases of typhoid, no amount of treatment of them will eliminate the danger of their spreading to other members of the community. Safety to the community lies in preventing such diseases rather than in curing them.

Just as the firemen of recent years have assumed the duty of inspecting buildings and taking other measures for preventing fires, so physicians are nobly doing their part in attempting to prevent disease, although their chief function is in curing it. Real effective prevention must go further, however, and become a definite purpose of the community as a whole.

It has been said that public health is purchasable—that each city can have just as complete an amount of it as it is willing to pay for. While this statement of course needs modification when examined carefully, it is to a large extent true. There is an irreducible minimum below which reduction in sickness and death cannot go, since all must die at one time or another. But outside of these limits the general health and vigor of the community as represented by its individual citizens can be increased almost indefinitely by taking the adequate measures therefor. All are familiar with certain striking illustrations of the power of sanitary precautions to eliminate certain diseases. Perhaps the best known in this country are the complete elimination of yellow fever from our southern states and the remarkable record of our engineers in the Panama Canal zone. Less spectacular because more gradual, but even more important, has been the reduction in the general death rate of the country during the past few decades. Statistics apparently show that almost any city in the country can congratulate itself that its death rate during the past decade was only half what it would have been fifty or a hundred years ago.

Just think what this means! Any city can recall names of citizens who died last year whose death was a distinct loss to the community at large, and any individual can recall many others whose death was a real loss to themselves. Had conditions been as they were two or three generations ago, both community and individual would in all probability have sustained double this loss. And the only reason that they did not was because of the better sanitary conditions that have been brought about by modern practice. This general statement can be given definite application. A certain city, hesitating between spending part of its income upon a sewer extension or upon a more spectacular piece of public work.

chose the latter, thereby leaving, in the district that was not sewered, a score or more of outdoor privies that should have been eliminated. This section was in the negro quarter, and probably some reasoned that the negroes did not want the sewer, and possibly their health was considered as a matter of minor importance or was not considered at all. Cases of typhoid occurred in this unsewered section the following year. One of the most prominent business men of the town had as his cook a woman living in this quarter. There can be little question that through her the disease was carried from this unsewered district into his household and resulted in his death. Probably any business man in that city will testify that the loss of this one citizen meant more to the community than the entire sum that would have been required for constructing the sewer in question.

Public health is not a mere theoretical idea, or altruistic, or beyond the comprehension of the ordinary citizen. It is a matter of the most practical and selfish concern to every one of us.

Everything indicates that the next few years will be the most important in the history of this country. We will need the best efforts of every man to meet and successfully solve the problems that are going to be put up to us. We will need improved roads and more of them, more efficient machinery, the perfection of new ideas in commercial methods; but with it all, and in fact back of it all, must be a vigor of the nation, which means nothing if it does not mean the vigor of every individual in the nation, that will not only secure these weapons of the commercial warfare which must be waged but will enable us to use them to the best advantage.

No function of city, state or country during the next few years will be more important than those whose purpose is the establishing of a more perfect public health. It is to be hoped that no shortsighted policy of economy or blind failure to observe and realize the above truths will prevent us from giving this matter the consideration and financial backing that it deserves.

WAYNE COUNTY'S CONCRETE ROADS

Report of County Road Commissioners on Condition of Concrete Roads Under Enormous Increase in Traffic—Changes in Construction Methods.

The Board of County Road Commissioners of Wayne County, Michigan, in its report for the year ending September 30th, prefaces the report proper with a general statement which we give below. It will be remembered that Wayne County and concrete roads made each other famous a few years ago when the county launched a concrete road program that was ahead of anything that had been proposed up to that time. The general statement is as follows:

In our annual report last year we stated that 1917 had emphasized the value of durable roads to a greater degree than ever before known in the history of Wayne county.

The year 1918 has added emphasis to that report. It has sustained again in every particular the judgment of our board that concrete roads as the standard type for our main highways are least expensive to the taxpayer—construction and maintenance taken together—and afford the widest range of public service.

The year has been remarkable from two viewpoints:

First, highway tonnage has been increased enormously by war activities in manufacturing plants centering around Detroit, thus adding to the burden of traffic which our roads must carry.

Second, an urgent national necessity arose for the movement of freight over highways in the quickest time

possible, and with the lowest possible consumption of gasoline for fuel.

These demands have been met fully in Wayne county. This result is due primarily to our comprehensive system of roads, connecting, as they do, the principal points in the county, and to the durability and evenness of surface which are the marked advantages of concrete. Our roads have again proved their dependability under all conditions of weather, in sustaining greater weight and speedier movement, at the same time effecting a marked saving in the consumption of gasoline for fuel in creating power.

There is no economy in narrow roads. As we have heretofore indicated in our reports, traffic follows good roads. The tonnage soon increases beyond the capacity of a narrow pavement to carry it, with the result that the expense of maintaining macadam or gravel shoulders in a very short time exceeds what it would have cost to build a wider slab.

Not only does existing traffic shift to paved roads, but what was once termed a theory has in practice proved to be a fact: The time saved in marketing on concrete roads results in greater production on farms and truck gardens, since more is available for cultivating a larger acreage, or cultivating the same acreage more intensively. This adds to the tonnage which the roads must carry, and also the profits of those who enjoy their time-saving advantages.

During the year, what is known as the return loads bureau idea has been developed. In plainer terms, perhaps, that idea means that it is wasteful in time, fuel and labor to make a return trip with an empty truck, where loads may be hauled both ways. The idea grew out of the need for relieving the congestion of freight on railways by diverting short-haul tonnage to the highways, and also to prevent useless consumption of gasoline. Here the parallel between the railway and the highway presents itself as a result of traffic growth. Wasting coal, time and labor in hauling "empties" over a railway is no more absurd, from an economic standpoint, than running empty motor trucks over our highways.

Since loads both ways means the need of roads both ways, we are, therefore, building wider pavements in Wayne county, to afford an outlet for enlarged traffic, with an ultimate saving to taxpayers. Double track highways are now as essential as double track railways.

The marketing of eggs, vegetables, fruit and other farm products continues to shift around from town to the farmer's gate. This shift in marketing, with the result that cash comes into the farm home every day, where formerly the produce had to be taken to market once or twice a week, is due to the fact that our concrete roads permit the consumer in the city to go to the producer in the country and make the bargains first-hand, without waiting for the producer to pull through mud and rough roads to reach the consumer.

The U. S. Department of Agriculture, through its Bureau of Markets, has offered its co-operation to the operators of motor express lines in establishing a system of rural transportation on regular schedule, with the view of reducing the cost of handling farm produce and farm supplies en route between buyer and seller. Our concrete roads, we are pleased to report, are ready and ample for these new developments.

The advantages that come to a county having its own road building plant and equipment have been made manifest the past year. Owning and operating, as we do, our own equipment, we have been able to proceed with our work without being hampered unduly by the prevalent shortage of labor.

IN RETROSPECT.

We feel that we can pause for a moment in retrospect of what we have accomplished. When the call came,

Wayne County was found ready. Our concrete roads are helping win as great war victories, in time of war, as they have won and are winning economic victories at all times. Without the Miller and Dix concrete roads, the Ford plant on the River Rouge would be seriously handicapped for the transportation of both men and materials. The Aviation Testing Field on Warren road would operate under a like handicap were it not for the narrow concrete road built there a number of years ago. While it is true that this road is too narrow to give the best of service, yet the original soggy, undrained clay grade that formerly served as a highway would be practically impassable. The concrete roads on Gratiot and Jefferson roads have served Selfridge Field, at Mt. Clemens, with a minimum expenditure of time and energy. The Van Dyke road is ably serving the Dodge plant. The thousands of trucks, trailers, ambulances and passenger cars that have traversed Grand River, Woodward and Michigan Avenue roads, and finally passed down the River Road, Michigan's gateway to the East, via Toledo, are ample justification, if any were needed, for the road policy of Wayne county.

In Wayne county, on July 1st, there were 57,633 licensed passenger motor cars, 9,988 commercial cars or motor trucks of various capacities, and 2,481 motorcycles. This great traffic, which is rapidly increasing, is supplemented by thousands of motor trucks, built for war purposes, which have had their origin in and around Detroit and, in their trips to the seaboard, have traveled and are traveling over 7, 8 and 9-year old roads, which have stood up under the loading and strain in a remarkable manner.

In brief, our experiences during the past year have again demonstrated the value of building a durable road bed, since, by so doing, we have been able to give more time and effort to other improvements which modern traffic demands.

The members of the board are Edward N. Hines, Chairman; John S. Haggerty and William F. Butler.

DYNAMITING A CITY STREET

Recently in the town of Warren, Pennsylvania, it was found necessary to remove a section of concrete pavement, 60 feet wide by 100 feet long, in grading the approach to a newly constructed bridge across the river on South Main street. The work was efficiently performed by the use of dynamite with a minimum of labor and cost. Thirty pounds of Red Cross 40% Extra dynamite were used to blast out the concrete, which was from 8 to 12 inches thick. To avoid binding the concrete, it was shot at angles and great care had to be exercised to avoid damaging the beautiful homes that line both sides of this thoroughfare and to protect from injury the many people who passed this point daily.

Instead of a regulation rope blasting mat, which, due to the closeness of the work would only have permitted the shooting of one charge at a time, a special planking arrangement was used which permitted two blasts to be set off at once by battery, each shot consisting of three-quarters of a cartridge.

This mat was built of six oak planks, eighty-three inches long, sixteen inches thick and twelve inches wide. These were joined together by two six-foot planks eight inches wide and six inches thick. The contrivance was reinforced with ordinary boiler iron, each plank being thus lined separately.

By this blasting the concrete was broken into small sections and not a building was marred nor a single window broken in the vicinity. As blasting was restricted to certain hours, it required six days to complete the work. —DuPont Magazine.

The WEEK'S NEWS

Government Officials Encourage Highway Construction—Huge Toll of Influenza in U. S.—U. S. Public Health Reserve Organized—Electric Interconnection in California—Passaic's Two-Platoon Fire System—New York Police as Wireless Operators—Real Estate Tax Situation in New York—Proposed Reconstruction Program for New York State—War Labor Board Declines Jurisdiction Over City Workers' Unions—San Francisco's Municipal Buses Legal.

ROADS AND PAVEMENTS

President Wilson Urges Highway Construction.

Washington, D. C.—In his message to Congress read before leaving for Europe, President Wilson made two statements regarding the need of public improvements, particularly highways. He said: "The ordinary and normal processes of private initiative will not, however, provide immediate employment for all of the men of our returning armies. Those who are of trained capacity, those who are skilled workmen, those who have acquired familiarity with established businesses, those who are ready and willing to go to the farms, all those whose aptitudes are known or will be sought out by employers, will find no difficulty, it is safe to say, in finding place and employment. But there will be others who will be at a loss where to gain a livelihood unless pains are taken to guide them and put them in the way of work. There will be a large floating residuum of labor which should not be left wholly to shift for itself. It seems to me important, therefore, that the development of public works of every sort should be promptly resumed, in order that opportunities should be created for unskilled labor in particular, and that plans should be made for such developments of our unused lands and our natural resources as we have hitherto lacked stimulation to undertake."

He also said: "What the country chiefly needs is that all its means of transportation should be developed, its railways, its waterways, its highways, and its countryside roads."

That early resumption and extension of highway construction is highly desirable in the opinion of President Wilson, is shown by a letter from him made public by Secretary of Agriculture Houston. The President expressed the belief that an additional appropriation should be made for the purpose. "It is important not only to develop good highways throughout the country as quickly as possible," said the President's letter, "but it is also at this time especially advisable to resume and extend all such essential public works, with a view to furnishing employment for laborers who may be seeking new tasks during the period of readjustment." Secretary Houston also made public a letter from Secretary Baker in which the War Secretary asserted that the War Department will continue to co-operate with the Department of Agriculture in the building of roads.

Highways to Help Feed Europe.

Washington, D. C.—The Highways Transport Committee, Council of National Defense, has put into operation the machinery of its organization to the end that the urgent request of chairman Edward N. Hurley of the U. S. Shipping Board for assistance in the moving over the highways of all food supplies designed for the relief of the stricken peoples of Europe, be carried out. This task is one which extends to the personnel of the Highways Transport Committee throughout the entire country and also is a call upon the people of the United States to give to the pressing problems of peace the same patriotic attention and assistance furnished so enthusiastically by them during the period of the war. The meeting of this responsibility by the Highways Transport Committee through its eleven regional chairmen, its state committees, its district and county committees, and community organizations, means that the best efforts of this force down to the last man is

to be put behind this program. The cooperation likewise of the general public will, as suggested, be necessary to make the work a success. This cooperation all along the line means that not only must the production of food be given careful and intelligent attention, but that the means for moving this food over our highways in every section of the country in the most efficient manner possible, be intensively stimulated. Since chairman Hurley called upon the Highways Transport Committee to render this service, Administrator Hoover has in statements emphasized the need for prompt action along these lines. Chairman Hurley's letter to the Highways Transport Committee says in part: "The Highways Transport Service is the first step in the great system of transportation to the sea and then on the merchant marine to the far points of the world. The Highways Transport Committee throughout this land could and should render a peace-time service by stimulating highways transport of nourishment and supplies so badly needed. Routes and channels from shipping points must be opened up and efficiently maintained, and our merchant marine must be built up to meet the demand for distribution overseas. Resistance in any form to the free movement of farm products must be reduced and eliminated, and the most efficient utilization of man-power must be introduced wherever possible."

Progress on Utah Desert Highway.

Salt Lake City, Utah.—According to reports from R. E. Dillree, superintendent of construction upon the Goodyear Section of the Lincoln Highway across the Great Salt Lake Desert, rapid progress is being made with the work. With the exception of two short stretches of 400 feet each upon the Big Springs Wash and the Callao Wash, two of the worst sections to be overcome in crossing the entire Desert, the work has been carried on without a hitch. The two 400-foot stretches will be completed through the building of a corduroy road over these sections, upon which the grade can be constructed. Rapid progress in the completion of the grade is now assured, as the ground to be crossed to the eastward from the present point of operation is reported in excellent condition. To facilitate the efforts of the construction crew, four tents have been placed upon skids and are now maintained upon the Desert, being moved along as the work progresses. This portable camp will greatly facilitate the efforts of superintendent Dillree in taking advantage of every available opportunity to hasten the work.

Boom in County Road Construction.

Auburn, N. Y.—Road construction in Cayuga county, starting next spring, will in all probability exceed in amount any on record for a single year, according to J. Charles Dayton, superintendent of highways in this county. During the last war year he succeeded in cutting down road expenses and curtailing labor, at the same time getting the maximum of road improvement. The largest single item in the economy campaign practiced by the various town superintendents under superintendent Dayton was the using of local stone instead of importing it from commercial quarries. Despite war conditions Cayuga county built 15 miles of county road of water bound macadam last year. Road construction has been going on in every town in the county during the last season with the exception of Owasco and Brutus, where local stone was not available. Cayuga County has ample supplies of stone suitable for road building. In addition to quarry-

ing their own stone many of the towns have used stone which through the years has been piled in fields and several have even taken down old stone fences to use in road building. Aurelius, Ledyard, Moravia and Niles found limestone beds and operated their own quarries. To meet the wartime emergency Venice purchased a four-acre tract containing a fair grade of limestone. The quarry is centrally located, but as most of the road work of the town was being done on the western end of the town road, the long haul prevented the accomplishment of as much construction as had been planned. The only towns of the county which were forced to buy stone from commercial quarries were Montezuma, Mentz and Throop. Montezuma brought its stone in by rail while the other two towns hauled it in, with the result that the cost of the work in all three was materially higher than in any other of the towns. According to superintendent Dayton, the county road truck purchased by the board of supervisors this year has enabled the officials to accomplish a larger amount of work than by the use of teams only. It has also earned 40 per cent of its cost above operating expenses, he said. In Cayuga county the snow fences ordered by the state have already been erected, 600 feet of them being built in Aurelius, 600 feet in Sennett and 200 feet in Brutus. The state appropriation has already been made and officials in Cayuga county are anticipating going ahead with measures to keep the road across the county open whether the passage of motor trucks demands it or not.

SEWERAGE AND SANITATION

350,000 Influenza Epidemic Deaths in U. S.

Washington, D. C.—Between 300,000 and 350,000 deaths from influenza and pneumonia have occurred among the civilian population of the United States since Sept. 15, according to estimates of the U. S. Public Health Service. These calculations, the officials believe, are conservative. The epidemic still persists, but fatalities are much less. A recrudescence of the disease now is occurring in many communities, but this is believed to be sporadic. The Government incurred liabilities of more than \$170,000,000 in connection with life insurance carried by soldiers in army camps, not including those in Europe. About 20,000 deaths occurred in the camps here.

State Commission Studying Influenza.

Albany, N. Y.—A commission for the study of cause, prevention and treatment of epidemic influenza has been appointed by Governor Whitman. Members of the commission are as follows: Dr. Hermann M. Biggs, commissioner, New York state department of health, chairman; Dr. Walter B. James, professor of clinical medicine, College of Physicians and Surgeons, Columbia University, vice-chairman; C-E. A. Winslow, professor of hygiene, Yale University, secretary; Dr. Henry A. Christian, professor of medicine, Harvard University; Dr. Llewellyn F. Barker, professor of medicine, John Hopkins University; Dr. L. Emmett Holt, professor of diseases of children, College of Physicians and Surgeons, Columbia University; Dr. William H. Park, director research laboratory, New York city department of health; Dr. Wickliffe Rose, director general International Health Board; Dr. Victor C. Heiser, regional director, International Health Board; Dr. A. B. Wadsworth, director of laboratories, New York state department of health; Dr. Rufus I. Cole, director of hospital, Rockefeller Institute; Dr. G. N. McCoy, director hygienic laboratory, U. S. Public Health Service; Dr. Joseph Goldberger, chairman Pellagra Commission, U. S. Public Health Service; Dr. Matthias Nicoll, Jr., deputy commissioner, New York state department of health; Lieut. Commander Phelps, representing General Braisted, Surgeon General U. S. Navy; Dr. Paul Lewis, chief, Sanitary Division, U. S. Navy; Dr. Milton J. Rosenau, professor of bacteriology, Harvard University; Col. John Howland, Surgeon General's Office, U. S. Public Health Service. The first work of the commission, which is now being undertaken, is the attempt to reach a definite conclusion as to the value of influenza

vaccines in preventing the disease. A large number of different groups of people in institutions, cantonments, factories, hospitals, prisons and patients of various physicians will be studied, so that it is hoped that before long a definite statement may be made on this subject. Surveys of certain cities where influenza has been most severe will be made, not only in this state but in others, in order to study the cause of the local epidemic, the probable point of entry, the method of spread, types of the disease, the effect of age, sex, and nationality, and the incidence, morbidity and mortality rates. Although the epidemic has practically spent its force in most of New York state, it is felt that a great deal of knowledge can be obtained in regard to this disease which will be of inestimable value in the future. It is also probable that in the states which have not been invaded, especially in the west, special studies will be made in regard to prevention by vaccines and the value of quarantine.

To Organize U. S. Public Health Reserve.

Washington, D. C.—President Wilson has signed a joint resolution passed by Congress, authorizing the formation of a reserve of the United States Public Health Service. The resolution was originally introduced in Congress in June, 1917. Its scope was subsequently enlarged, but the resolution as finally passed seems to be more restricted than in its earlier stages. It authorizes the President to commission, for five years, officers in the United States Public Health Service Reserve who pass examinations prescribed by the President, these officers to form "a reserve for duty in the Public Health Service in time of national emergency." None of the officers commissioned shall have higher rank than that of assistant surgeon general. The reserve officers "shall be distributed in the several grades in the same proportion as now obtains among the commissioned medical officers of the United States Public Health Service, and shall at all times be subject to call to active duty by the Surgeon General, and when on such active duty shall receive the same pay and allowances as are now provided by law and regulation for the commissioned medical officers in the said regular commissioned Medical Corps."

STREET LIGHTING AND POWER

Restrict Use of Natural Gas in Louisville.

Louisville, Ky.—The Fuel Administration has issued a drastic order regulating the use of natural gas in this city. The danger of a shortage of natural gas in the city is so imminent that the order cuts every consumer, domestic as well as industrial, to a maximum consumption of 1,000 cu. ft. per day. By a special permit from the state fuel administrator industries that cannot substitute other fuel may be allowed more fuel. "The use of natural gas in the city of Louisville, Ky., and along the lines of the Kentucky Pipe Line Company, for any purpose whatsoever," says the order, "is hereby restricted to not exceeding 1,000 cu. ft. per day to each consumer; provided, however, that in exceptional cases where a substitute fuel is not obtainable and suffering would otherwise result, and where natural gas is being used in limited quantities in excess of 1,000 cu. ft. per day for industrial purposes and other fuel cannot be reasonably substituted, an additional supply of natural gas in excess of 1,000 cu. ft. per day may be furnished such consumer upon written permit therefor issued by the Federal Fuel Administrator for the state of Kentucky; and the said Louisville Gas and Electric Company and the said Kentucky Pipe Line Company are hereby prohibited from delivering to any consumer natural gas in excess of 1,000 cu. ft. per day except upon written permit therefore issued by the federal fuel administrator for the state of Kentucky, and provided further that whenever the supply of natural gas is in excess of the quantity required to fill the demands therefor within the limit hereby imposed, the companies may make a pro rata delivery of such excess to their consumers." In explaining the order, the Fuel Administration said that the Louisville companies receive their gas

from the West Virginia fields, subject to prior contracts with other consumers, so that a rationing of the field could not help Louisville. It also pointed out that 8 per cent of the Louisville consumers used 50 per cent of the gas. One residence alone burned 500,000 cu. ft. in January, 1918, another consumed 400,000 cu. ft. in that month and several required more than 300,000 cu. ft., while 78 consumed between 100,000 and 200,000 cu. ft. each. Ninety-six and one-half per cent of the consumers used less than 1,000 a day each, only 1,500 consumers burning more than that amount. The figures cited by the Fuel Administration report indicate that Louisville will receive less than 8,500,000 cu. ft.

Proposed City Hydroelectric Plant Not Favored.

Ashtabula, O.—According to the report made by Daniel W. Mead and Charles V. Seastone, the consulting engineering firm retained by the city to estimate the cost of the proposed water power plant, it would cost \$2,420,855 under pre-war prices, and \$1,771,988 under normal market prices for material and labor. The report also states that the flow of water in Ashtabula river is not sufficient to provide a plant which would be fully efficient more than half of each year. On the full development of the three dams under consideration, power could be provided under pre-war cost of labor and material, at 1.15 cents per kilowatt hour, and 2.2 cents under present conditions. According to the firm's report the proposition is not attractive because of the shortage of water and because the cost of furnishing power would be too high.

Transmission Line Interconnects Big Systems.

Medford, Ore.—The California-Oregon Power Co., which has its main offices here, has completed a 70,000-volt transmission line, 35 miles in length, extending from Dunsmuir to Kennett, both in California. This line will connect at Kennett with the lines of the Northern California Power Co., and through them will tie in with the Pacific Gas & Electric Co. system. Through this arrangement the eight hydroelectric plants and 500 miles of transmission lines of California-Oregon Power Co. will be interconnected with the great system to the south, and will be able to deliver to it about 10,000 kw. in electric energy. The new connecting line enables the California-Oregon, which produces a surplus of power, to turn its excess into Pacific Gas & Electric system, which has been handicapped by a power shortage. Of the eight hydroelectric stations of the California-Oregon, four are in southern Oregon and four are in northern California. The location and capacity of those in Oregon are as follows: Two on Link River, near Klamath Falls, 600 and 360 kw., respectively; one at Gold Bay, on Rogue River, 12 miles north of Medford, 1,500 kw.; one at Prospect, on Rogue River, 50 miles north of Medford, 4,700 kw. The four California plants, with the capacity of each, are located as follows: Fall Creek, 2,000 kw.; Copco, on Klamath River, 12,500 kw.; Shasta River, 360 kw.; Trinity, on Coffee Creek, 180 kw. The newest and largest plant at Copco is to be doubled in capacity. The machinery and almost all equipment are now on the ground for the installation of a new 12,500-kv.-a. unit. In this company's territory the largest industrial load for which installations have been made this year is the plant and quarry of the Oregon State Lime Board at Gold Hill, which produces and delivers crushed lime rock to farmers of the state for a fertilizer. In this work the necessary power and light require 115 hp.

City Wins Right to Appeal Gas Increases.

Providence, R. I.—The motion of the Providence Gas Company to dismiss the appeals by the city of Providence and the town of North Providence to the decision of the public utilities commission allowing the gas company to charge \$1.30 per thousand for gas has been denied in an opinion handed down by associate justice William H. Sweetland, of the Superior Court. This action will have the effect of bringing the gas rate question before the full supreme bench for a hearing at some future date upon its merits. The question before the court upon the gas company's motion to dismiss the appeal was one of jurisdic-

tion, counsel for the company contending that the city of Providence and the town of North Providence had no legal standing as appellants because they were no complainants. In his opinion Judge Sweetland says:

Chapter 795 of the public laws is an act creating the public utilities commission, prescribing its powers and duties, and providing for the regulation and control of public utilities. All the questions involved in the matter now before us are governed by the provisions of the act.

After quoting certain sections of the act and commenting thereon, the opinion continues:

The commission undertook to make an investigation on its own motion. Notices of the hearing and investigations were given to the Providence Gas Company as respondent and to such other persons as the commission deemed necessary, including the city of Providence and the town of North Providence; and thereafter, under the provisions of the act, the proceeding was to be conducted as if it was a complaint filed with the commission.

Judge Sweetland cites section 17 of the act, which provides for the manner in which investigations shall be made by the public utilities commission, and gives that board authority to adopt rules governing its inquiries. He then quotes from Rule 3, which says:

Parties or utilities not parties, may petition in any proceeding for leave to intervene and be heard therein. Such petition shall set forth the petitioner's interest in the proceeding. The leave granted on such application shall entitle the intervenor to appear and be treated as a party to the proceeding.

The court says that the chairman of the commission, at the opening of the investigation, made the following statement:

I suggest that at this time the various cities and towns will enter their appearances with the stenographer, and, of course, such cities and towns as do enter their appearance will be given permission to intervene as parties to these proceedings.

The court's opinion then says:

Thereupon the city of Providence and the town of North Providence each entered its appearance, and throughout the hearing acted as parties adversary to the respondent and introduced evidence in opposition to the claims of the respondent.

At the close of the hearing the solicitor for the city of Providence and the solicitor for the town of North Providence each argued against the approval by the commission of the schedules of rates and charges filed by the respondent. The position assumed at the hearing by said city and town, respectively, was identical with that of a party instituting a complaint against the respondent gas company attacking the justice of its rates and charges.

In the circumstances of the matter we are of the opinion that when said city and town were permitted to intervene as parties in the proceeding, which, under the statute, was being conducted as though it was a complaint filed with the commission, they intervened as parties complainant with the rights of complainants, including the rights to appeal from the final order afterwards made by the commission.

FIRE AND POLICE

Two-Platoon System Installed.

Passaic, N. J.—The two-platoon system for the firemen, which was approved by the voters at the recent general election, is to be installed as soon as the ordinance before council can legally go into effect. By the ordinance the officers and members of the uniformed fire fighting force are divided into two bodies or platoons, which are designated as a day force and a night force, which alternate on tours of duty every fourth day. The chief of the department, Reginald H. Bowker, will have full power to keep the men on duty at times other than their specified time in case of emergency, and one of the main features of the ordinance gives the chief the right to keep the men within the city limits at all times, whether they be on or off duty. No member of the department will be allowed to leave the city, during his time off, without the consent of the chief or assistant chief. Commissioner John H. Kehoe, director of the department by virtue of his office, said that there would be no real attempt to keep the men at home all the time, adding that the clause was placed in the ordinance to be used during emergencies. The other provisions of the ordinance are as follows:

The hours of duty of the day force shall be from eight o'clock A. M. to six o'clock P. M., and the hours of duty of the night force shall be from six o'clock P. M. to eight o'clock the following morning, provided that on every fourth day, for the purpose of alternating the day force with the night force and vice versa, the number of hours of duty herein stated may be exceeded, but one force shall be at liberty at all times, except as otherwise provided.

In case of necessity, the officer, officers or board having

charge and control of the fire fighting force shall have full authority to summon and keep on duty any or all of the members of such fire fighting force.

The term "members" when used in these rules, includes officers.

In case of tardiness it shall be the duty of the commanding officer to immediately notify the chief or in his absence the assistant chief of the department of same, and make entry of same in daily journal and on daily report. Members must report for duty on time, and no shift shall go off duty until properly relieved.

Roll call will be made at eight o'clock A. M. and six o'clock P. M. by the commanding officer of the relieving shift by calling his company to attention, and inspecting the men and uniforms, entry will be made in the company journal, and the daily report of the exact time of each roll call, and the condition of the company, noting any exceptions that may occur.

Members on night shift will be required to arise at six o'clock A. M., clean apparatus, sweep floors, make beds, the balance of the work to be done by the day shift. Following the completion of their work, members must wash up and be in full uniform before being relieved by the next shift.

Night watch must be maintained at all stations and no sleeping in chairs or beds will be permitted.

New or inexperienced men must not be assigned to night watch or responsible detail, every assignment being made with the efficiency of the service in view.

Every member, when reporting for duty or leaving after being relieved, will be required to wear full uniform.

Members of the uniform force will wear the regulation uniform of the department only when actually on duty or when proceeding to or from duty between their homes and the quarters of companies to which they may be attached. No member of the department not actually on duty will use the uniform of the department, or any part thereof for the purpose of identifying himself as a member of the department, in order to gain entrance to any place of public amusement where an admission fee is ordinarily charged, without payment of such fees.

The wearing of department uniforms or any part thereof by any member while said member is off duty is hereby strictly prohibited, unless otherwise ordered by the chief or in his absence the assistant chief.

Department telephone must not be used for other than department business, conversations by and between members of the department and others outside, except in cases of extreme necessity over the department telephones, are strictly prohibited.

Members under no circumstances will be allowed to leave the city on their days or nights off without permission from the chief or in his absence the assistant chief.

No smoking will be permitted by members of the department on apparatus while going or returning from fire, or while doing duty at fires.

Members of the department must not loiter or remain about any of the department quarters longer than the time necessary consumed in transacting the department business.

Every member of the department shall devote his whole time to business of the department, and is expressly prohibited from being engaged in, employed in, or giving his personal attention to any other business.

Firemen detailed to act as auto drivers on chiefs' automobiles may be considered as aides to the chiefs during fires and may be used by such chiefs in carrying orders to and from the various officers during fires. Any and all orders and directions received by company officers from these aides, when the name of the directing chief is given, must be promptly carried out as if coming direct from the commanding officers themselves. Auto drivers so detailed are strictly forbidden to give any directions or orders not specifically authorized or directed by a chief.

Beds may be occupied by members only from 11 P. M. until 6 A. M., and no lounging or reclining in a position to indicate sleep will be permitted.

Police Power Used to De-Rouge Girls' Faces.

Newark, N. J.—Policewomen have been carrying on a campaign against young girls who rouge and powder their faces, seizing them and forcing them to wash. Any tendency to refusal usually vanishes at the sight of the police badges. The campaign is being carried on under orders issued by police inspector Thomas J. Corbally, who said that it is necessary because the well-being of Newark has been menaced recently by invasions from New York and other places by girls with dangerous complexions, and also because some local girls, whose parents forbid cosmetics, put on their make-up in the rest rooms at the stations, make their public appearance in color and then take it off at the same place before returning home. "I get my authority from the common law," said inspector Corbally, "and I feel also that I am acting in the place of the parents of these girls, who would want me to do what I am doing, if they knew what was going on."

Police Do Valuable Wireless Work.

New York, N. Y.—The story of how the city has been protected by wireless telegraphy has now been given out, as the military consorship of shipping and harbor matters has been lifted. Col. Arthur Woods, when police commissioner, installed a wireless on the roof of police headquarters and on the police boat patrol. The boat steamed about the rivers and harbor with two operators to flash

messages. As the lookout saw fires or other things that needed attention word was flashed to headquarters and relayed to either fire headquarters or the police station nearest to the trouble. Three operators were stationed at headquarters. A report of the wireless work made to acting commissioner Leach shows that merchandise worth \$400,000 and at least twenty-five lives were saved in the two years it has been carried out. One barge with a cargo of coffee worth \$100,000 was saved. Many boats with persons aboard were caught adrift. There were 2,000 messages handled. The wireless on headquarters has received messages from a distance of 1,500 miles and transmitted them 300 miles.

GOVERNMENT AND FINANCE

Urges Important State Reconstruction Work.

New York, N. Y.—Joseph M. Price, as chairman of the board of trustees of the City Club, has sent to Governor-elect Alfred E. Smith what he terms a partial reconstruction programme, urging that Mr. Smith recommend to the legislature that it take favorable action on the proposals. The chief suggestions offered by Mr. Price are: "1. The passage of a moderate workmen's health insurance measure, similar in scope to the measure prepared by the City Club, the State Federation of Labor and other organizations, and introduced in the legislature of 1918. 2. The systematic pushing forward of necessary public works, to provide employment for the men of the returning armies. 3. The adoption of a constructive programme for state-city co-operative employment offices and the vigilant regulation of the private profit making agencies. 4. The creation of a state housing commission, to investigate and report as to the best methods of securing adequate and proper housing whether through a system of state loans or otherwise."

Real Estate Interests Want Fixed Realty Tax.

New York, N. Y.—The Real Estate Board of New York is planning a campaign to urge economy at Albany, and will cause to be introduced legislation enforcing local economy and simplicity in administration. The board believes that the tax on all forms of personal property should be the same, and, as the proportion of personal property in the city of New York is estimated at eight to one, that one-quarter of one per cent tax on personal and two per cent on real estate would be a fair and equal distribution of the burden of supporting local and state government. The program of legislation to be introduced at Albany is as follows:

- A bill repealing the tax lien law.
- A bill abolishing the Bronx parkway commission.
- A bill abolishing the court house board.
- A bill abolishing the board of inebriety and the parole commission.
- A bill abolishing the board of water supply.
- A bill enabling all taxes, assessments and water rates to be collected in one bureau of the controller's office.
- A bill making the department of markets and the department of weights and measures part of the bureau of collection of city revenue in the controller's office.
- A bill to put the department of licenses in the mayor's office.
- A bill to give the board of estimate and apportionment the power to fix all county salaries except those of elected officers.
- A bill will be introduced defining the responsibility of agents and owners under the labor laws, and also more thoroughly defining a factory.
- A bill will also be introduced to properly provide for and apportion the assessment for the extension of Varick street and the widening of Seventh avenue.
- A bill to amend the tenement house law, generally, relative to four-family converted dwellings.
- The board will also support a bill to give the local legislative bodies power to consolidate departments doing similar work and to abolish unnecessary city departments.

In connection with the board's plans for the presentation of another bill calling for a fixed tax rate, which it is expected will be submitted at the early session of the new legislature, a proposal has been made to the budget committee of the board of estimate and apportionment asking for an adjustment in the methods of receiving assessment rolls of the city and estimates of administrative expenses for the various city departments. The proposal asks that provision be made that the assessment rolls of the city for both real estate and personal property be completed by

November 1, and that all estimates for budget purposes be in the hands of the mayor by September 1 and submitted to the estimate board committee prior to November 1. This will give ample time for close scrutiny and examination of reports before the city's budget must be made up. "There is nothing revolutionary in a fixed tax rate on real and personal property," says the Real Estate Board. "The constitution of the state of New York limits the tax on real and personal property in counties containing cities of over 100,000 population to 2 per cent, exclusive of the debt service, and this limitation was fixed at a time when real property even in the city of New York was only assessed at one-half of its real value. Now the assessment is admitted by the state board of equalization to be at least 94 per cent of the real value, and the average is really nearer 100 per cent. Almost all forms of personal property have now fixed tax rates." The Real Estate Board asserts that a fixed tax rate on real and personal property would (1) provide sufficient income to carry on government honestly and economically administered; (2) make taxation simple and easily understood, as all other forms of taxation would be abolished, except for federal purposes; (3) limit the municipal government to legitimate functions of administration for which there will be money enough for all reasonable city activities and the fullest extension of the city's charities. Coupled with its tax program, the board has prepared legislation to aid the city administration in its plan to give the community an economical government, practical and efficient. Bills will be introduced to (1) abolish all commissions or boards spending city money without city control; (2) give the board of estimate power to regulate salaries of county employees; (3) give the board of aldermen and the board of estimate power to consolidate existing departments having functions in common, and to abolish unnecessary bureaus.

A new movement has developed. With the co-operation of the Advisory Council of Real Estate Interests, an organization calling itself the Taxpayers' and Tenants' Protective League has been effected, with William E. Harmon, of Wood, Harmon & Co., who originated the idea, as chairman of the committee on organization. The plan is not to appeal to the big taxpayers, but to organize a co-operative movement among small taxpayers and tenants who will spread the organization among themselves not only as taxpayers, but as voters. The object of the organization is to get behind a bill to limit the assessment on real estate in New York City to \$17.50 per thousand of valuation, and force the taxing authorities to find other sources of revenue. A mark of 100,000 has been set as the size of the membership in the city alone, and as many more in the state.

U. S. Board Declines Jurisdiction Over City Workers.

Washington, D. C.—Holding that the question of right to organize among municipal employees is a separate matter from the right to organize in industrial plants, the National War Labor Board has refused to assume jurisdiction. The action was taken in a case brought by the city firemen of Omaha, Neb., seeking the right to organize and asking for higher wages.

TRAFFIC AND TRANSPORTATION

City Threatens Railway with Jitney Competition.

Sacramento, Cal.—The city commission has repealed the ordinance requiring every jitney to secure a permit before engaging as a common carrier. The commission had previously threatened to take this step unless the company withdrew its application to the California railroad commission for a 6-cent fare.

Upholds Legality of Municipal Buses.

San Francisco, Cal.—The state supreme court has reversed the decision of superior judge George Crothers and confirmed the right of the city board of public works to purchase automobile buses as feeders for the municipal railroad. The opinion holds that the board may purchase equipment for a public utility under an ordinance of the board of supervisors. According to the court, the super-

LEGAL NEWS

A Summary and Notes of Recent Decisions— Rulings of Interest to Municipalities

Injury to Police Traffic Officer—Negligence.

(La.) In action by a police traffic officer for injury to plaintiff's foot by defendant's automobile, held, that plaintiff's injury was attributable to his own negligence in suddenly running against the automobile.—*Anderson v. Clesi*, 78 So. 943.

Liability for Damages by City—Recovery from Railway.

(Wash.) A city against which a pedestrian recovered judgment for injuries due to defective sidewalk would not be entitled to reimbursement from defendants, joint tortfeasors, to whom city granted tunnel franchise, binding grantees to pay any judgment rendered against city by reason of negligent or defective construction, maintenance, and operation of tunnel, if city contributed to injury by construction of sidewalk or by permitting defect to exist for an unreasonable length of time.—*City of Seattle v. Great Northern Ry. Co.*, 174 P. 4.

Gravel Loading Machinery—Lost Profit—Damages.

(Or.) In action for price of machinery to be used in loading gravel, defended on ground of breach of warranty, the purchaser could not recover anticipated profit on mere allegation that he could have sold the gravel, in the absence of showing that he had definitely contracted to that effect; the damages being too remote.—*Feeney & Bremer Co. v. Stone*, 174 P. 152.

Where defendant purchased machinery for loading gravel, but because of breach of warranty of the machinery was prevented from selling the gravel or handling it, since he still had the gravel, his measure of damages was the difference between the contract and the market price of the gravel, constituting the profit where he lost.—*Id.*

Railroad Bridge Over Road—Rights of Municipality.

(N. J. Ch.) Right of railroads to build road and carry it across public plank road by overhead bridge is absolute, and consent of municipal authorities is necessary only when it is desired to cross at grade, which consent must be obtained from municipality even in crossing county road.—*United New Jersey R. & Canal Co. v. Freeholders of Hudson & Essex*, 104 A. 98.

Where railroads have right to bridge public plank road to connect lines, and, though having right, under Railroad Act, §27, to place abutments of bridge within road, nevertheless propose to place them outside, they have right to construct temporary bridge with abutments inside road.—*Id.*

Railroads having absolute right to bridge public plank road to connect lines will suffer irreparable injury, entitling them to injunction against county authorities interfering with work, if, with railroad partly constructed up to roadway, use is delayed for want of bridge.—*Id.*

Where railroads, in exercise of right, proceeded to bridge public plank road, and county superintendent of road caused arrest of engineer and thereafter was suspended, in railroads' suit against county authorities to enjoin interference with construction, it being plain that what superintendent did accorded with authorities' views, objection superintendent's action was not that of county authorities is purely technical.—*Id.*

visors may provide a scheme for the acquisition of such equipment, and the board of public works is not required to follow the charter provisions for the purchase of ordinary supplies.

Vote Against Fare Increase.

Spartansburg, S. C.—The citizens at a recent special election voted against the petition of the Carolina Light, Power & Railways Company to increase its fare to 7 cents. The total vote was light, being 244 against to 84 in favor.

THE MUNICIPAL INDEX

In Which Are Listed and Classified by Subjects All Articles Treating of Municipal Topics Which Have Appeared During the Past Month in the Leading Periodicals.

It is our purpose to give in the second issue of each month a list of all articles of any length or importance which have appeared in all the American periodicals and the leading ones published in other countries, dealing more or less directly with municipal matters. The Index is kept up to date, and the month of literature covered each time will be brought up to within two or three days of publication. Our chief object in this is to keep our readers in touch with all the current literature on municipal matters. In furtherance of this we will furnish any of the articles listed in the index for the price named after each article, except that where an article is continued in two or three issues of the paper, the price given is for each of said issues. In addition to the titles where these are not sufficiently descriptive or where the article is of sufficient importance, a brief statement of its contents is added. The length also is given, and the name of the author when it is a contributed article.

ROADS AND STREETS.

Bituminous Pavements:

The Maintenance of Asphalt Pavements by the Cut and Replace Method. Describes plant operation, equipment and the details of the street work. By J. W. Routh, chief engineer, Rochester Bureau of Municipal Research. 7 illus., 5,000 words. Municipal & County Engineering, November. 30 cts.

Macadam and Hard-Surface Paving Up-keep Compared. Hard surface favored by Washington State official when maintenance exceeds \$500 per mile per year. 1 table, 500 words. Engineering News-Record, November 7. 20 cts.

Concrete Pavements:

Delivering Aggregate to Concrete Mixers. Description of a plan worked out by Gibbon's & Read of Salt Lake City in connection with concrete paving in Payson, Utah. 400 words. Municipal Journal, November 23. 10 cts.

Direct Charging of Concrete Mixers. Notable feature of the construction of the concrete pavement on a ten-mile section of the Coleman Du Pont road in Sussex County, Delaware. 1,100 words. Municipal Journal, November 16. 10 cts.

Oiled Macadam Roads Resurfaced with Concrete. Los Angeles county, California, builds roads in two sections to keep traffic moving; center joint keeps autos on own side. By E. A. Burt, assistant engineer, Los Angeles County, road dept. 3 illus., 1,300 words. Engineering News-Record, November 21. 20 cts.

Construction and Maintenance:

Road Maintenance Methods and Devices Effect Saving of Material, Labor and Fuel. Bureau of Maintenance and Repair, N. Y. State Highway Dept., working through nine division engineers, endeavors to keep the war-traffic roads open and still conserve materials. 5 illus., 2,800 words. Engineering News-Record, November 28. 20 cts.

Pavement Base in Buffalo. Mixing machines and other labor-saving devices used by contractors in Buffalo, N. Y. 500 words. Municipal Journal, November 9. 10 cts.

Winter Care of Contractors' Equipment. Timely advice concerning the care during idleness of road contractor's equipment contained in the latest issue of "Concrete Highway Magazine." 400 words. Municipal Journal, November 23. 10 cts.

Keeping Pennsylvania's Main Roads Open. Description of the methods employed by the State Highway Department in snow removal work during the winter 1917-1918. By Geo. H. Biles, second deputy state highway commissioner of Pennsylvania. 1 ill., 1,800 words. Good Roads, November 23. 10 cts.

Preparing Pavements for Winter. Editorial on importance of putting streets and highways in a condition to last through the winter weather, when repairs or maintenance work is almost entirely out of the question. 600 words. Municipal Journal, November 23. 10 cts.

Highway Transportation:

Gasoline Consumption Tests Demonstrate Value of Hard, Smooth-Surfaced Roads. Gasoline saving which would pay for the construction of a hard surface in a few years is indicated between earth and smooth concrete, where a daily motor traffic of 500 can be expected. By A. N. Johnson, consulting highway engineer, Portland Cement Association, Chicago. Ill. 3 illus., 4,000 words. Engineering News-Record, November 7. 20 cts.

Highway-Motor Truck Problem as Viewed by User, Manufacturer and Engineer. Three articles expressing the views of representatives of the three parties most directly interested in highway transportation—the user of the road,

the manufacturer of the vehicle and the engineer responsible for the track. Agree as to size of truck—that of 5-ton capacity. By Geo. H. Fride, president, Heavy Haulage Co., N. Y. C.; Edward L. Viets, Service Recorder Co., Cleveland, O.; H. Eltinge Breed, first deputy commissioner of highways, New York State. 2 illus., 11,000 words. Engineering News-Record, November 28. 20 cts.

Surveying and Planning:

Elastic and Garden Streets in Philadelphia. The idea of "elastic" streets, provided for by ordinance in 1915, proving popular. 400 words. Municipal Journal, November 23. 10 cts.

Capacity of Macadam Roads for War Business Increased. Three-foot concrete shoulders added at each side without closing highways to traffic; war labor conserved by using convicts for the construction. 5 illus., 2,400 words. Engineering News-Record, November 28. 20 cts.

Standardization of Pavement Design and Construction. Advantages and illustrations in connection with broken stone, asphalt, brick, etc. By Prevost Hubbard of U. S. Bureau of Public Roads. 3,000 words. Municipal and County Engineering, November. 30 cts.

Principles on Which the French Highways Are Built. Roman system of direct lines between strategic points followed; great attention is given to drainage. By Frank W. Harris, Captain of Engineers, U. S. A., A. E. F. 1 ill., 600 words. Engineering News-Record, November 21. 20 cts.

Making a Road Map by Automobile Survey. Twelve to Fifteen miles an hour surveyed with reasonable accuracy by two men. 2 illus., 800 words. Municipal Journal, November 23. 10 cts.

Street Surveying at Night. Device for surveying at night used by Los Angeles engineering department. 1 ill., 200 words. Municipal Journal, November 9. 10 cts.

Highway Financing:

Road Construction by Parcel Post. Suggestion of fourth assistant postmaster that profits of expanded parcels post system be used for road construction. 1,300 words. Municipal Journal, November 23. 10 cts.

Government Financing of Good Roads. Editorial discussing a definite plan for financing nation-wide highway improvement and advocacy of Federal aid. 500 words. Municipal Journal, November 30. 15 cts.

Classification of Expenditures for Highway Cost Accounting. Outline of system proposed in a recent publication of the Office of Public Roads and Rural Engineering. 5 tables, 600 words. Good Roads, November 9. 10 cts.

Miscellaneous:

Highway Construction and the Labor Problem. Letter from T. J. Ehrhart, state highway commissioner of Colorado, urging national consideration of the Better Roads question. 700 words. Municipal Journal, November 30. 10 cts.

Roadside Trees in North Carolina. Advantages of arguments against such trees; reserving and planting; legal status; state laws and suggested legislation. By J. S. Holmes, state forester. 3,300 words. Municipal Journal, November 9. 10 cts.

Highway Work in Ontario. Canadian province makes progress in war-time road work and in preparing for traffic needs of the future. 1 ill., 1,700 words. Good Roads, November 16. 10 cts.

Road Work in Wayne County, Michigan. 12th annual report reviews operations of the Board of County Road Commissioners during the fiscal year of 1917-18. 1 ill., 900 words. Good Roads, November 30. 10 cts.

Shade Trees for Roads. Editorial comment on the bare and comparatively tree-

less condition of the roadside after highway improvements have been made. 750 words. Municipal Journal, November 9. 10 cts.

California State Highway Yards. The California State Highway Commission now has under maintenance 1,240 miles of paved highway and 1,060 miles of graded road. 700 words. Municipal Journal, November 9. 10 cts.

SEWERAGE AND SANITATION.

Sewage Treatment:

The Water Supply and Sewage Disposal Plants of Penal and Charitable Institutions of Wisconsin. Brief description of the plants, what is being done to improve them, and suggestions as to the care of them. By W. G. Kirchoffer, consulting engineer to Wisconsin State Department of Engineering. 1,200 words. Municipal and County Engineering, November. 30 cts.

Control of Small Sewage Disposal Works. Records, analyses and some simple tests; should have no offensive odor. By James H. Edmondson. 1,700 words. Canadian Engineer, November 21. 15 cts.

Sewage Disposal from an Operator's Standpoint. Experience in connection with plant work, including screens, pumps, sedimentation tanks, bacteria beds and disinfecting chamber. By W. K. F. Durrant. 2,000 words. Western Municipal News, November. 15 cts.

Consolidation of Sludge as a Dewatering Method. Experiment with standing sludge in tanks. 600 words. Engineering & Contracting, November 13. 15 cts.

The Control of Small Sewage Disposal Works. Notes on English practice in a paper before the Institution of Municipal Engineers. 1,100 words. Engineering & Contracting, November 13. 15 cts.

Sewage Mixes Progressively in Its Passage Through Tanks. Lawrence experiments with activated-sludge and settling tanks show that common assumptions are not founded on fact. By H. W. Clark, director and chemist, Division of Water and Sewage Laboratories, Massachusetts State Department of Health. 2 ill., 1,200 words. Engineering News-Record, November 21. 20 cts.

Toronto's Drifting Sand Filter. Description of construction and operation; bacteriological and physical test and conclusions as to efficiency of plant. 2,000 words. Municipal Journal, November 16. 10 cts.

Sewage Treatment in Easton. Demonstration plant of one million gallons capacity, of the "Direct Oxidation" type; details of plant and method of operation. 4 ill., 1,900 words. Municipal Journal, November 16. 10 cts.

Maintenance:

Incrustation in Vancouver Sewer Pipe. A letter to the editor concerning the formation of incrustation on the machine-made concrete pipe sewers in use in this city since 1909. By A. G. Dalzell. 3 ill., 3,800 words. Canadian Engineer, November 7. 15 cts.

Sewer Maintenance in San Francisco. Brief description of the sewer repair department, which employs about 100 men. 300 words. Municipal Journal, November 9. 10 cts.

War-Time Repairs Form Basis of Future Sewer Reconstruction. By S. M. Bailey, Assistant Engineer, Department of Public Works, Newport, Ky. 1 ill., 300 words. Engineering News-Record, November 7. 20 cts.

Costs:

Estimating Sewer System Costs. Analysis of elements entering into calculation, with figures from five years' experience in a large contracting business. By Stanley D. Moore, president of Moore-Siege Construction Co., Waterloo, Ia. 2,700 words. Municipal Journal, November 2. 10 cts.

Estimating Sewer System Costs. Overhead is very deceptive; computations from costs; co-operation needed. Paper before Iowa Engineering Society by Stanley D. Moore. 3,000 words. Canadian Engineer, November 14. 15 cts.

Sanitation:

A Sanitary Survey of a City. Features of municipal activity and of community and individual interests covered by such survey; mortality statistics; health department records; communicable diseases; food supply; water supply; sewerage, and lack of it; garbage collection and disposal; nuisances. 3 ill., 3,200 words. Municipal Journal, November 9. 10 cts.

Extra-Cantonment Sanitation. How U. S. Public Health Service endeavored to secure healthful conditions and surroundings at Camp Bowie, the aviation fields nearby and the adjacent areas; anti-malarial work; urban and rural sanitation. By W. A. Hardenbergh, assistant sanitary engineer, U. S. Public Health Service. 12 ill., 3,200 words. Municipal Journal, November 30. 10 cts.

A Sanitary Survey of a City. Water purification plant; houses not connected to sewers; drop manholes; result of lack of sewerage plans; garbage collection. (Conclusion.) 3 ill., 4,000 words. Municipal Journal, November 16. 10 cts.

Urban District Sanitation. Editorial discussing the work done during the past year by the U. S. Public Health Service in improving sanitary conditions in the vicinity of cantonments. 1,000 words. Municipal Journal, November 30. 15 cts.

WATER SUPPLY.

Operation:

Electricity Supersedes Steam Pumps in Los Angeles. Saving to city will total 18,000 barrels of fuel oil annually; other municipal departments adopt motor drive. 3 ill., 2,400 words. Electrical Review, November 9. 30 cts.

Some Experience with Large-Capacity Reservoir Outlets. Specially designed gates control discharge of immense volumes of water under pressures above 200 feet; difficulties and how they have been overcome. By James M. Gaylord, electrical engineer, U. S. Reclamation Service, Denver, Colo. 2 ill., 5,300 words. Engineering News-Record, November 21. 20 cts.

Waterworks Operation. Method of using Orsat apparatus explained; use of oil as fuel; steam, air-jet and mechanical burners. 5 ill., 2,700 words. Municipal Journal, November 2. 10 cts.

Waterworks Operation. The freezing and thawing of water mains and services; methods of thawing; preventing freezing. 2,700 words. Municipal Journal, November 23. 10 cts.

Waterworks operation. Methods used for thawing services and mains; heating by flame, by hot water, steam and electricity; apparatus used. 2 ill., 1,500 words. Municipal Journal, November 30. 10 cts.

Flow of Water in Wash Water Troughs for Rapid Sand Filters. Result of investigation at Cornell University laboratory. 2 ill., 2,000 words. Engineering and Contracting, November 13. 15 cts.

High-Pressure Gates in Dams for Waterworks and Irrigation Reviewed. From the sluice gates in the Sudbury dam of the Boston waterworks through the various stages of gate development in the high dams of the United States Reclamation Service. By D. W. Cole, senior engineer, U. S. Reclamation Service, Boise, Idaho. 5 ill., 4,000 words. Engineering News-Record, November 14. 20 cts.

Distribution:

Service Connections to Concrete Water Mains. Both wood and concrete used more extensively than heretofore, due to the high cost of cast iron pipe; method of making service connections to mains. 1 ill., 400 words. Municipal Journal, November 9. 10 cts.

Methods of Preventing Freezing of Riser Pipes. Refers to pipes for elevated towers. 700 words. Engineering & Contracting, November 13. 15 cts.

Protection of Water Mains, Fire Hydrants and Valves in Winnipeg. By Thomas H. Hooper, operating superintendent of waterworks of Winnipeg. From the "Quarterly of the National Fire Protection Association." 900 words. Municipal Journal, November 23. 10 cts.

Miscellaneous:

Water Consumption in New York State Cities and Its Effect on Coal Consumption. From a recent report compiled by the State Bureau of Municipal Informa-

tion of the New York State Conference of Mayors. 2,200 words. American City, November. 35 cts.

Consumers Help to Finance Installations. Elmira, N. Y., Water, Light & Railroad Co. finds new method successful. 500 words. Electrical Review, November 2. 30 cts.

Waterworks Finances at Boulder. Rates increased 25 per cent. by city manager, E. O. Heinrich, of Boulder, Colo., without serious opposition from the consumers. 500 words. Municipal Journal, November 2. 10 cts.

Irrigation District Plan Favored in California. Experience shows it is better than either private or mutual water companies; irrigation district bond commission. 1,100 words. Engineering News-Record, November 7. 20 cts.

Water Supply Development for Hampton Roads. War Department to spend \$1,800,000 in the development of a water supply. 300 words. Municipal Journal, November 16. 10 cts.

Hannibal's Municipal Light and Water Departments. Favorable report for the fiscal years 1917-1918 of the Municipal Electric Light and Power Department and the Water Department of Hannibal, Mo. 1,000 words. Municipal Journal, November 30. 10 cts.

LIGHTING AND POWER.

Illumination:

Lessened Restrictions on Lightless Nights. Text of Dr. Garfield's modified order effective on November 11; application different in various sections of the country. 1,100 words. Electrical World, November 16. 15 cts.

The Relation Between Light Curtailment and Accidents. It is estimated that the services of 108,000 men are lost annually because of accidents attributed to poor illumination. 650 words. Electrical World, November 16. 15 cts.

War-Time Lighting Economies. Salient features of report prepared by the war service committee of Illuminating Engineering Society for the United States Fuel Administration; fallacies to be avoided; making maximum use of daylight. 3,600 words. Electrical World, November 9. 15 cts.

Gas:

Cheap Gas—Who Wants It Most, the Consumer or the Gas Company? The first interested merely to the extent of a few dollars annually; the latter to the extent of greater returns on millions of dollars of investment. By S. G. Addison. 700 words. American Gas Engineering Journal, November 9. 10 cts.

French Gas Industry After the War. Translated from the president's address delivered at the recent meeting of the French Gas Association. 1,500 words. Gas Age, November 1. 25 cts.

How War Affected the German Gas Industry. Review of items published regarding the condition of the gas business in Germany. 2,900 words. Gas Age, November 1. 25 cts.

Garfield May Recommend Lower B. t. u. Standards. Effect of lower standards on oil conservation. 500 words. Gas Age, November 1. 25 cts.

The War Is Over—Now to Rebuild. War Industries Board removes all restriction on gas plant construction and permits increase of 50 per cent. in appliance output. 1,800 words. Gas Age, November 15. 25 cts.

Growth of the Oxygen Industry in the United States and Its Relation to Oxy-Acetylene Welding and Cutting Processes. Processes for obtaining gases; electrolytic predominates; why the central producing plant continues main source of supply despite encouragement of portable plants by producers. By Harry L. Barnitz, Ph.G. 2,800 words. American Gas Engineering Journal, November 9. 10 cts.

Plant Design and Construction:

Foundation Construction. First units of a 150,000-kw. power plant is being built for the Kansas City & Power Co., by the Foundation Co. 7 ill., 1,400 words. Engineering & Cement World, November 1. 15 cts.

Boiler-Setting Radiation and Air Leakage. Results of experiments to determine best method of covering boiler settings to bring about a reduction in radiation and escape of air; type of covering which saves 1,000-hp. battery per year. By E. S. Hight, chief operating engineer, Illinois Traction System. 1 ill., 1,700 words. Electrical World, November 23. 15 cts.

Reinforced Concrete Saves Steel in Power Plant. Example of the extent to

which steel can be replaced if unavailable; expediency and not economy the important factor. 1,300 words. Electrical World, November 23. 15 cts.

The Power Station at Millers Ford. Salient features of Dayton Power & Light Company's new plant; precautions against floods, and labor-saving efficiency refinements, are prominent features. 10 ill., 3,000 words. Engineering & Cement World, November 1. 15 cts.

Plant Arrangement and Costs of Construction. Features of latest station of Turners Falls Power & Electric Co., which bids fair to be one of the most important steam plants in the New England states. 3 ill., 3,000 words. Electrical World, November 9.

Electrical Distribution:

Transmission Line Has 4,800-ft. Clear Span. High voltage overhead construction across St. Lawrence river near Three Rivers, P. Q.; largest span of its kind in the world; vibration and other problems still to be solved; detailed description of foundations. By S. Swenningson, supervising engineer, Shawinigan Water & Power Co., Montreal. 10 ill., 5,700 words. Canadian Engineer, November 28. 15 cts.

110,000-Volt. Transmission Over the St. Lawrence River. Abstract of paper dealing with some remarkable construction recently completed by the Shawinigan Water & Power Co. near Three Rivers, Quebec. By S. Swenningson. 3 ill., 5,000 words. Proceedings of the American Institute of Electrical Engineers, November. \$1.00.

Terre Haute Installs Booster System to Give Adequate Service in Northern Section of Its Territory. Results excellent; reduction in percentage of lost gas; weighting down holder with concrete blocks; the Ford car as a weight raiser. By A. C. Howard, gas engineer, United Gas & Electric Engrg. Co., N. Y. City. 2,100 words. American Gas Engineering Journal, November 2. 10 cts.

Economical Increase Made in Distribution Capacity. Notable saving of copper and transformers by replacing old overloaded 2,300-volt system with 2,300/4,000-volt star-connected, three-phase, common-neutral primary and interconnected secondary. By S. Bingham Hood, superintendent of distribution, Northern States Power Co., Minneapolis. 5 ill., 4,800 words. Electrical World, November 30. 15 cts.

Transmission systems of Connecticut. Interconnection of electric utility lines, especially in the industrial territory of the state, constitutes an important factor in the conservation of fuel; description of the work completed and in process of construction. 1 map, 1,800 pages. Electrical World, November 16. 15 cts.

Fuel:

Lignite Becomes of Importance as a Fuel Resource. Carbonized briquets for domestic service compare favorably with anthracite coal; absence of objectional tar gives it an advantage over higher grade coal for use in suction power gas producers, inasmuch as the gas goes to the engine clean and tar free. 3,600 words. American Gas Engineering Journal, November 23. 10 cts.

Briquet Coke a Product of Double Carbonization. A novel process under development which affects the coke produced and yield of by-products. 5 ill., 1,700 words. Gas Age, November 1. 25 cts.

Lignitic Coal, Its Characteristics and Utilization. Necessity for conserving the supply of gas coal for carbonization and the use of lower grade coal for general use. 2 ill., 4,500 words. Gas Age, November 15. 25 cts.

Miscellaneous:

Reconstructing a Logical Program for Hydroelectric Development. Investigations of water-power development to relieve power and fuel shortage; salient features of logical development program. 10 ill., 1,200 words. Electrical Review, November 23. 30 cts.

War-Time Lighting Finances. How the municipal plant of South Norwalk, Conn., met the difficult conditions of the past year. 2,000 words. Municipal Journal, November 23. 10 cts.

Protection Against Thieving Customers. Investigation brings out that meter protection will result in decrease in waste of energy besides increase in revenue. By C. W. Ward. 1,100 words. Electrical World, November 30. 15 cts.

The Demand-Meter Situation. Critical discussion of demand meters, pointing out the advantages that are gained through the use of well-known types of these instruments and remedies for some

of the troubles encountered in their practical application. By C. F. Mathes, meter foreman of the Trinidad (Col.) Electric Transmission, Railway & Gas Co. 2,700 words. Electrical World, November 30. 15 cts.

Electricity Supersedes Steam in Los Angeles. Saving to city total 18,000 barrels of fuel oil annually; other municipal departments adopt motor drive. 3 ill., 1,700 words. Engineering and Cement World, November 15. 15 cts.

Electricity in the Cement Industry. General information regarding the different classes of machinery used and sizes and types of motors best adapted for the work; part 1 of a paper before A. I. E. E. By R. B. Williamson. 2,600 words. Electrical Review, November 16. 2,600 words. November 23. 30 cts.

Electrical Industry in Reconstruction. Peace means new opportunities for service in different branches of the industry; factors of labor, capital, raw materials and markets, and possibilities of changes. 2 ill., 1,800 words. Electrical World, November 16. 15 cts.

Labor Readjustment in the Electric Industry. Labor problems of electrical companies; prospects for additional business and need for more help; where help may come from. 4 ill., 3,000 words. Electrical Review, November 23. 30 cts.

FIRE AND POLICE.

Fire Department:

Wants More Volunteers. A. C. McNulty says corps might be organized in New York for fire prevention. 1,000 words. Fireman's Herald, November 16. 10 cts.

Fire Departments Compared. Review of conditions disclosed by the U. S. Census Bureau. 1,500 words. Fireman's Herald, November 16. 10 cts.

Decision of Supreme Court. Case of Taro vs. City of Everett, on appeal, in Washington, affirms fire department independence. 700 words. Fireman's Herald, November 2. 10 cts.

Three-Platoons in London. Some of the requests made by firemen in the British metropolis. 1,400 words. Fireman's Herald, November 9. 10 cts.

Fire Department of Philadelphia. Unsatisfactory report recently submitted to the National Board of Fire Underwriters by its committee on fire prevention. 400 words. Municipal Journal, November 9. 10 cts.

Fire Prevention and Public Safety:

A Fire Prevention Law. A Canadian act for suppression of fires which was one of the first to be passed. 4,200 words. Fireman's Herald, November 2. 10 cts.

The Forest Fires. How the National Government might prevent disasters like this year's. 1,600 words. Fireman's Herald, November 9. 10 cts.

A Fire a Minute—and Why. Many varieties of carelessness regarding which fire chiefs and fire marshals should warn the public. By W. E. Mallalieu, general manager, National Board of Fire Underwriters. 3 ill., 3,000 words. American City, November. 35 cts.

A Municipal Chimney Sweep. An unusual municipal official in St. Joseph, Mo., who is appointed by the mayor. 400 words. Municipal Journal, November 9. 10 cts.

Rochester's Notable Public Safety Campaign. An account of a public safety campaign conducted under the auspices of the Rochester Chamber of Commerce and the National Safety Council lasting from March 1 to September 1, 1918. 5 ill., 1,500 words. American City, November. 35 cts.

STREET CLEANING AND REFUSE DISPOSAL.

Street Cleaning:

Philadelphia Bureau of Street Cleaning. New forms for inspectors' daily reports; trying out street cleaning machinery; new ash wagon and ash truck adopted. 2 ill., 700 words. Municipal Journal, November 9. 10 cts.

General Phases of Street Cleaning. Use of motor vehicles in street cleaning; snow removal; collection and disposal of rubbish. From report to American Society of Municipal Improvements, by G. H. Norton, Rudolph Hering and R. C. Harris. 1,500 words. Canadian Engineer, November 21. 15 cts.

Collection and Disposal:

Garbage Disposal in Akron. Description of new system installed by the Akron Garbage Collection Co. in 1917. 2

ills., 900 words. American City, November. 35 cts.

Government to Facilitate Waste Collection. Government about to take the necessary action to assist the individual to dispose of the materials which it had been urged to save. 600 words. Municipal Journal, November 16. 10 cts.

Philadelphia's New Ash Trucks. Details of the 5½-ton truck adopted by the new bureau of street cleaning; cost of operating. 2 ill., 700 words. Municipal Journal, November 30. 10 cts.

Refuse Collection in Spokane. Motor trucks used for collection in the residence and business districts, and for collecting light rubbish; horse-drawn wagon for collecting ashes. By Arthur E. Peterson. 6 ill., 400 words. Municipal Journal, November 16. 10 cts.

Snow Removal:

"Fighting Snow." A square deal for the regular car equipment involves the provision of adequate special apparatus and intelligent use of both. By J. M. Pneuman, railway engineer, Westinghouse Electric & Manufacturing Co., Pittsburgh, Pa. 2 ill., 2,400 words. Electric Railway Journal, November 9. 15 cts.

Snow Removed by Various Methods at Milwaukee. Street railway loads snow by electric shovels into dump-car trains and motor trucks dumping through a bridge. 2 ill., 800 words. Engineering News-Record, November 7. 20 cts.

Snow Removal and Federal Requirements for Highway Transport. Address at the conference on "Snow Removal from Trunk Highways," held under the auspices of the National Highway Traffic Ass'n., at New York. By Raymond Beck, field engineer, Council of National Defense. 700 words. Good Roads, November 30. 10 cts.

GOVERNMENT AND FINANCE.

Reconstruction:

American Reconstruction Conference Discusses Federal and Municipal Problems. National planning, housing, garden cities and public employment among topics at Rochester meeting. 1,000 words. Engineering News-Record, November 28. 20 cts.

Problems of Industrial Reconstruction. Message on importance of reconstruction; calmness of spirit and absence of haste necessary. By Wm. C. Redfield, Secretary, Department of Commerce, Josephus Daniels, Secretary of the Navy, and Geo. M. Reynolds, president, Continental & Commercial National Bank, Chicago. 1 ill., 1,600 words. Electrical Review, November 23. 30 cts.

Outlook in Reconstruction As It Is Seen in Chicago. Report from the Middle West on the factors which will probably determine the condition of the industry. 2 ill., 1,000 words. Electrical World, November 16. 15 cts.

Reconstruction Problem from an Engineering Standpoint. An answer to the question as to what engineering organizations could do at the present time to help in the solution of after-war reconstruction problems. 1,700 words. Journal of the Engineers' Club of St. Louis. 35 cts.

A Motive and a Method for American Reconstruction. National and local committees of reconstruction; an analogy from war-time experience; suggestions for immediate action of municipal officials and local civic bodies. 4,000 words. American City, November. 35 cts.

After-War Problems—Respective Obligations of National, State and Local Governments. Reconstruction of our allies; federal action, local cooperation, civic influence; a national conference on reconstruction; first things to do. By Clinton Rogers Woodruff, secretary, National Municipal League. 2,200 words. American City, November. 35 cts.

Politics and Reconstruction Getting Mixed in Washington. Spirited contest developing in the national capital over government plans for control of reconstruction measures. By Wingrove Bathon. 1,600 words. Electrical World, November 16. 15 cts.

Miscellaneous.

Progress, Prospects and Pitfalls of the New Profession of City Manager. Paper before 5th annual convention of city managers. By O. E. Carr, city manager of Springfield, O. 2,300 words. Engineering & Contracting, November 20. 15 cts.

Politics and Public Utilities. The tendency of the politicians is to make capital out of the public utilities and to act as if losses to them are a gain to the public; municipal ownership now a prominent political issue. By Welton W. Harris. 2,200 words. Electric Railway Journal, November 2. 15 cts.

Public Interest in Municipal Matters. The "City Record" of Boston in a recent issue names the departments to which complaints, inquiries and suggestions regarding municipal work should be addressed; advisability of giving similar information in every city. 700 words. Municipal Journal, November 2. 10 cts.

Municipal Service Finances. Comments on municipal service enterprises from the latest annual report of "Financial Transactions of Municipalities and Counties of California." By John S. Chambers, state controller. 300 words. Municipal Journal, November 30. 15 cts.

Assessment and Taxation of Property in Manitoba Municipalities. Synopsis by E. M. Wood, Esq., deputy municipal commissioner and chairman of the Manitoba Assessment and Taxation Board. 4,000 words. Western Municipal News, November. 15 cts.

TRAFFIC AND TRANSPORTATION.

Electric Railways:

Recent Happenings in Great Britain. Conservation again a foremost topic of discussion; many towns stop all cars on Sunday. 1,700 words. Electric Railway Journal, November 2. 15 cts.

Public Service Railway Does War Work at Camden and Gloucester. New cars, loading loops and additional feeder copper were needed to get the shipbuilders to work on time; the improvements will cost nearly \$1,250,000. 6 ill., 3,200 words. Electric Railway Journal, November 23. 15 cts.

New Orleans Adopts Modern Transportation Organization. Duties of department heads clearly defined; interrelation of departments will result in greater efficiency of each. 700 words. Electric Railway Journal, November 30. 15 cts.

Montreal Tunnel Zone Electrification. The author summarizes the details of the rolling stock, overhead and substation equipment, and gives some practical information as to design and construction problems. Abstract of paper presented before the American Institute of Electrical Engineers at Toronto, Ont., by William G. Gordon, transportation engineer, Canadian General Electric Co., Ltd., Toronto, Ont. 1 ill., 3,000 words. Electric Railway Journal, November 30. 15 cts.

Interurban Transportation:

The Proper Basis for Interurban Passenger Rates. Rates should be based on cost and service; electric rates should be higher than steam rates. Abstract of paper presented at meeting of Central Electric Railway Association at Indianapolis by A. Swartz, vice-president, Toledo & Western Railroad. 1,000 words. Electric Railway Journal, November 23. 15 cts.

The Interurban After the War. Increase in freight and passenger revenues and careful scrutiny of operating expenses are the only means of salvation. Abstract of paper presented at fall meeting of Central Electric Railway Association, at Indianapolis, by Harry Reid, president, Interstate Public Service Co., Louisville, Ky. 1,400 words. Electric Railway Journal, November 30. 15 cts.

Interurbans Have Not Done Duty. They slumbered while motor trucks went after the freight; real salesmanship by interurbans and railway reconstruction are among essentials now needed. Abstract of paper presented at meeting of Central Electric Railway Association, at Indianapolis, by Charles J. Laney, traffic manager, Northern Ohio Traction & Light Co., Akron, O. 2,300 words. Electric Railway Journal, November 30. 15 cts.

Public Ownership:

Public Ownership the Obvious Policy for Electric Railways. The unusual of today may well be the commonplace of tomorrow; public ownership would solve the many problems of operation; railways executives should be interested only in protection or return of investment. By Richard McCulloch, president, United Railways, St. Louis, Mo. 3,000

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NEWS OF THE SOCIETIES

Dec. 27-Jan. 2.—AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE. Annual convention. Boston and Cambridge, Mass. Secretary's office, Smithsonian Institute, Washington, D. C.

Jan. 13.—AMERICAN INSTITUTE OF CONSULTING ENGINEERS. Annual meeting, New York City. Deputy secretary, B. Etchelle, 35 Nassau St., New York City.

Feb. 18-21, 1919.—AMERICAN ROAD BUILDERS' ASSOCIATION. Sixteenth annual convention and Ninth American Good Roads Congress under the auspices of the A. R. B. A., Hotel McAlpin, New York, N. Y. Secretary, E. L. Powers, 150 Nassau street, New York, N. Y.

Associated General Contractors of America

Final plans for the organization of the contractors of the country, including those engaged in highway, street and sewer, waterworks, building and other municipal improvements, as well as government and state engineering and construction projects, into a national body to be probably called the Associated General Contractors of America, were discussed at a meeting held in Chicago Nov. 21 and 22. The general purposes of the organization will be to put the contracting business on a sounder basis in handling the large problems which confront the industry; to protect the interests of the business; to promote more general interest in construction work and to encourage all its phases; to develop more beneficial relations of the contractor towards the engineer, the client and the employee; to improve the efficiency of methods and to encourage higher standards of business ethics.

The need for such an organization was first seen when the National Federation of Building Industries was organized in Atlantic City. At that time the contractors realized that the field of the federation was so wide and large, and the interests of the general contractor had become so involved, that more specific concentration, which could be realized only through a general contractors' association, was a vital necessity.

A committee was appointed at the time for the purpose of organizing. This consisted of:

D. A. Garber (North Eastern Const. Co., 225 Fifth ave., New York), chairman; George Watson (Watson Co., 313 N. Texas bldg., Dallas); E. J. Thomas (D. D. Thomas & Son, Scimitar bldg., Memphis); C. F. Massard (sec.-treas., Central States Ass'n. of Building Contractors, Des Moines); M. D. Smith (A. J. Smith Construction Co., 8 Campau bldg., Detroit); T. T. Flagler (The Flagler Co., Healy bldg., Atlanta); Norman H. Mayo (Aberthaw Construction Co., 27 School st., Boston); Noble F. Hoggson (Hoggson Bros., 485 Fifth ave., New York); Charles W. Gompertz (503 Market st., San Francisco); John W. Cowper (The John W. Cowper Co., Fidelity bldg., Buffalo); Edward A. Steele (William Steel & Sons Co., 30 S. 15th st., Philadelphia); S. L. May (National Contract Co., Evansville, Ind.); Fred L. Ley (Springfield, Mass.); Frederick Cranford (Cranford Co., 188 Remsen sts., Brooklyn, N. Y.); George A. Oliver (Whitney bldg., New Orleans); W. A. Rogers (Rogers & Bates Const. Co., Old Colony bldg., Chicago); John R. MacArthur (MacArthur Bros. Co., 120 Broadway, New York); A. P. Greensfelder (Fruin-Colnon Contracting Co., Merchants Laclede bldg., St. Louis); E.

M. Craig and John A. Griffith (Bldg. Const. Employers' Assn., 133 W. Washington st.); H. D. Hammond, New York, secretary.

This committee stated that there were three fundamental objects of the association: Confidence between the contractor and the owner; confidence between the contractor and the material man, and confidence between the contractor and labor. These objects, pointed out the committee, make it necessary for the general contractor to have controlling representation, so that his interests will receive paramount attention. This, it was pointed out, was not possible in an organization such as the Federation of Building Industries, in which the smaller or subcontractors as well as the host of material men outnumbered the general contractors to such an extent that it would have been impossible for them to give the general contractors' problems the attention they require.

The committee has also considered the problems of labor, which are assuming such proportions that will require most careful consideration. It is the intention of the association to handle this subject on a broad and equitable basis, on the ground that la-

bor is also entitled to all the money it can make and it is the committee's opinion that unless the problem is handled in this light only delay, trouble and possible disaster will result. The committee asserts that the time is past when any large association can, by the weight of its members or influence, control labor in a manner inimical to the workers' interest.

Four thousand invitations to individuals and two hundred to associations were sent out in the call for the convention. More than 165 firms and 25 associations were represented at the meeting. Among the speakers were Brig. Gen. R. C. Marshall, jr., chief of the construction division, U. S. War Department; Col. W. A. Starrett, chairman, committee on emergency construction, War Industries Board; John F. O'Rourke, the well-known engineer and contractor, and Harry A. Wheeler, president, Chamber of Commerce of the United States.

The speakers emphasized the need of a construction contract which would more fairly divide responsibilities and risks and make adequate compensation safer. They declared that labor relations should be adjusted broadly recognizing labor's right to a voice in determining the principles and processes of industrial development.

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PROBLEMS CITIES ARE STUDYING WITH EXPERTS

Milwaukee, Wis., is to build BRIDGE approaches and concourses to cost \$200,000, according to plans prepared by the consulting architect and engineer, Alfred C. Clas.

A DAM is to be constructed by the City of Ottawa, Kan., according to plans prepared by the C. E. Jacoby Engineering Co., consulting engineering firm.

Richmond, Ind., plans the construction of a BRIDGE to cost \$180,000. The consulting engineer is J. L. Harrington, of the engineering firm of Harrington, Howard & Ash.

The Kaw Valley Drainage District, Kansas City, Kan., has had plans prepared for a DRAINAGE SYSTEM to cost \$1,000,000, by the consulting engineers, Alvord & Burdick.

Ethelberg, Ontario, Can., is to build a BRIDGE with steel spans over Fork river. Plans have been prepared by the Marsh Engineering Company, consulting engineers.

A DRAINAGE SYSTEM is to be constructed by the city of Arkadelphia, Ark., including thirty-one miles of open ditches and involving 1,705,000 cubic yards floating dredgework. The work is to cost about \$200,000, and plans were prepared by the consulting engineer, W. E. Ayres.

LEVEE WORK is to be done by the Imperial Irrigation District, El Centro, Cal., according to plans prepared by C. K. Clarke, consulting engineer.

Plans are completed for PAVING IMPROVEMENTS by the city of Springdale, Pa. The plans were prepared by the consulting engineers, Douglass & McKnight.

A REINFORCED CONCRETE BRIDGE of fifteen arches is to be built by the city of Peterboro, Ont., according to plans prepared by the consulting engineer, Frank Barber.

A STORM SEWER SYSTEM is to be built by the city of Coatesville, Pa., according to plans prepared by the consulting engineer, Alexander Potter.

A MEMORIAL BRIDGE is to be built by the city of Harrisburg, Pa., to cost \$2,000,000. The designing engineer is Arnold W. Brunner, and the structural engineering firm is J. E. Greiner & Company.

Wyandotte, Mich., is to build extensive WATERWORKS and SEWERAGE IMPROVEMENTS, including filter plant with 6,000,000-gallon daily capacity, brick and steel filter house and head house, filtered water reservoir, 850,000-gallon capacity, etc. The consulting engineer is R. Winthrop Pratt.

NEWS OF THE SOCIETIES

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A feature of the convention was an experience meeting at which representatives of a number of local contractors' associations described the work and results of their organizations.

The constitution limits membership to "general contractors, either firms or corporations, who have been engaged for at least two years in general contracting prior to applying for membership, or who have established a reputation for skill, honesty and responsibility. They must also undertake work in its entirety, partly at least with their own constructing forces." Members must be "associated organizations of general contractors, individuals, firms or corporations engaged in general contracting. Only such members of associated organizations as fulfil the above requirements shall have voting representation in this association." Dues are \$100 annually.

The following officers were elected: President, D. A. Garber, New York; first vice-president, W. A. Rogers, Chicago; second vice-president, T. T. Flagler, Atlanta; third vice-president, John W. Cowper, Buffalo; treasurer, C. F. Mullen, Cleveland. The executive board is to name a secretary.

National Highway Traffic Association.

A public meeting of the National Highway Traffic Association will be held at the Automobile Club of America, 247 West 54th street, New York City, at 8 p. m. on Monday, December 16, 1918.

The subject of "Segregated Traffic Streets" will be discussed from every viewpoint. A resolution will be offered relative to regulations now in force in New York City. The conclusions presented during the meeting will be summarized and published for the information of city officials throughout the United States.

Dr. John A. Harriss, deputy police commissioner in charge of traffic, New York City, will present a statement embodying his views and conclusions. The list of principal speakers will include: William P. Eno, traffic expert, Washington, D. C.; Arthur G. McKeever, president, Ajax Trucking Company, New York City; Richard W. Meade, New York City; George H. Pride, president, Heavy Haulage Company, New York City; Samuel W. Taylor, president, Rider and Driver, New York City. The addresses will be followed by a general discussion.

National Municipal League.

At its recent Rochester meeting, the National Municipal League adopted the following program dealing with the problems of reconstruction:

During the war, as measures of necessary national efficiency, numerous matters formerly within private control passed to the control of the people. Some of these things should un-

doubtedly be returned promptly to private enterprise, but the American people will miss a great opportunity if they allow certain of these temporary powers to slip through their fingers in the next few months, namely:

1. The long desired Federal employment service has been created, and the national Government has assumed responsibility for connecting employers and workers in the only right and efficient way. This service should be encouraged to extend its sphere to include the education of employers in modern principles of employment.

2. Corporations, particularly those doing an interstate business, have become a great source of Federal revenue, and may reasonably be expected to continue to be such. Federal control and supervision of their practices should be continued and extended, for they create national, not merely statewide, problems. Effort shall be made to free them from conflicting and ineffectual state regulation by a Federal incorporation procedure.

3. The Government has assumed control of railroads, telegraphs and telephones, opening the opportunity for either Federal ownership with private operation, or Federal ownership with Federal operation, or a reorganization by economical regional systems under a method of control that will protect the private capital by insuring a reasonable return, yet removing speculative and anti-social features of the private ownership of the past with its

relatively feeble and negative system of regulation. Whichever principle is adopted is a smaller matter than that the essential features of our present control should never be relinquished.

4. The Federal Government has acquired by its merchant fleet and its War Trade Board intimate knowledge and capacity for mobilizing our resources for foreign trade. Factors which will be valuable in normal peace times should be retained.

5. The Federal Government through its Food and Fuel Administrations and its War Industries Board acquired a command over basic resources which played a vital part in securing national efficiency. Every effort should be made to preserve the nucleus of these valuable agencies in such form and with such powers that we may achieve some part of that efficiency in peace.

6. The Federal Government has manifested grave interest and exerted its war powers to influence the cost of living and prevent profiteering. It should continue to exert its peace powers toward the same beneficent end.

7. The Federal Government has concerned itself effectively in the problem of housing industrial workers, and has placed upon a new basis of prestige and authority the American movement for garden cities and suburbs. Its interest in this aspect of the welfare of the workers and the efficiency of industry should not now lapse, but the Labor Department's bureau of industrial housing should be continued and its powers broadened to include educa-

INDUSTRIAL NEWS

Cast Iron Pipe.—There appears to be very little certainty of future conditions existing in the industry. There are no indications as to how soon or how far prices will go down. Meanwhile the quotations are: Chicago, 4-inch, \$69.80; 6-inch and larger, \$66.80; Class A, \$1 extra. New York: 4-inch, \$70.70; 6-inch and larger, \$67.70; Class A, \$1 extra.

The Portland Cement Association, 111 West Washington St., Chicago, Ill., announces the appointment of Wm. M. Kinney as general manager to succeed H. E. Hilts, resigned. Mr. Kinney has been connected with the cement industry in cement and concrete promotion work for over eleven years, having occupied for the past four years the positions of engineer, promotion bureau and inspecting engineer of the Universal Portland Cement Company. He is a member of many technical societies. He has been particularly active in the work of the American Society for Testing Materials, being vice-chairman of Committee C-1 on Cement and a member of the executive committee. He is a member of the executive committee, and secretary of the Committee on Concrete Roads and Pavements of the American Concrete Institute. Mr. Kinney was largely instrumental in establishing the Structural Materials

Research Laboratory at Lewis Institute, Chicago, under the direction of Professor D. A. Abrams, and has been since its inception, a member of the advisory committee.

Surplus War Supplies Not To Be Dumped.

Secretary of War Baker has announced that the War Department would not "dump" upon the market the large surplus of building materials and other supplies which has accumulated since hostilities ended in France. "The policy of the department," said Mr. Baker, "is not to disturb the market by dumping these supplies, but to hold them until we can determine just what use can be made of them, and later to dispose of any surplus gradually and in a manner likely to cause the least disturbance in the commercial markets."

Cement.—Portland cement is expected next year to experience the biggest year in its history. Production during the next twelve months no doubt will exceed the greatest quantity of cement ever turned out in the United States, namely, approximately 93,000,000 barrels. The kilns in all parts of the country have been promised coal and labor, and some are already at work producing cement to the utmost of their capacity.

tional work and research into our vast industrial housing problems.

8. As a measure of protecting the effectiveness of its soldiers and industrial workers, the Federal Government has found it necessary to use its influence with local governments regarding moral and health conditions. Such Federal interest in local governments should not lapse, but should eventuate in the continued attack upon vice problems by the Public Health Service and in the formation of a Federal bureau of municipalities in the Department of the Interior to collect and distribute information on municipal matters.

National Tax Association.

The annual convention of the National Tax Association scheduled for session in St. Louis beginning December 16, has been indefinitely postponed, owing to influenza. The convention was originally planned for November, and was then postponed owing to transportation difficulties due to war conditions.

American Museum of Safety.

The American Museum of Safety is to change its name to the "Safety Institute of America," effective December 31. The trustees of the Institute plan to enlarge and extend its activities next year. The permanent exhibition of safety devices will be continued.

The Safety Institute of America is an educational institution, supported entirely by voluntary contributions, for the benefit of both employers and employees in all matters connected with the safeguarding of life and limb.

Arthur Williams is president, William J. Moran secretary, and James Speyer treasurer. Among the vice-presidents are Elbert H. Gary, Mrs. E. H. Harriman, Charles E. Hughes, Dr. William H. Nichols, and B. B. Thayer.

Nebraska Good Roads Association.

Representatives from a number of communities in the state were recently called to a general meeting held in Omaha, during which the Nebraska Good Roads Association was organized. The meeting was attended by more than one hundred representatives of the various automobile clubs, commercial clubs, civic institutions and members of the newly elected state legislature. George Wolz, of Fremont, Nebraska State Consul of the Lincoln Highway Association, was elected president of the association.

The association will at once open an active campaign of education throughout the state, and prepare bills for presentation before the State Legislature, at the coming session in January, to assist in financing the permanent construction, which will be laid out upon an intra-state and inter-state plan. It is proposed to have 2,000 miles of permanent road in Nebraska within the next four years.

MUNICIPAL INDEX

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words. Electric Railway Journal, November 2. 15 cts.

Shall the Trolley Magnates Abdicate? Editorial comment on discussions of public ownership by about 500 executives of traction companies. 700 words. Municipal Journal, November 16. 10 cts.

Results of Journal Canvass of Opinion on Mortimer Resolution. Opinions of electric railway executives throughout the country show desire to view the subject of municipal ownership in broad way, but the belief is general that the time is not opportune for so radical a step. 3,500 words. Electric Railway Journal, November 9. 15 cts.

More Opinions on Public Ownership. Telegraphic canvass of Electric Railway Journal brings out valuable comment on subject from several angles. 2,400 words. Electric Railway Journal, November 16. 15 cts.

San Francisco's Municipal Street Railway. Development of system during past six years; compete with privately owned systems; conflict and combination; construction details; track and pavement laying; concrete trolley poles. 5 ills., 4,000 words. Municipal Journal, November 23. 10 cts.

Motor Vehicles:

Ford Car Cleans Waterworks Reservoir at Trenton, N. J. By W. Compton Wills, assistant engineer, Water Department, Wilmington, Del. 1 ill., 400 words. Engineering News-Record, November 28. 20 cts.

Comparison of Excavation Haulage by Motor Trucks, Industrial Railways and Teams. Detailed cost accounts on the construction of the Brooklyn Army Supply Base show that trucks are more economical than teams and less economical but more flexible than railways. 1 ill., 3,000 words. Engineering News-Record, November 28. 20 cts.

Miscellaneous:

Vancouver Freight Earnings \$1,000 a Week. British Columbia Railway has built up an interurban and transfer freight business on steam railroad basis; freight revenues exceed the earnings from passenger traffic. 3 ill., 2,000 words. Electric Railway Journal, November 9. 15 cts.

There Is No Further Time for Drifting. A crisis in the affairs of the electric railways is here; approaching sessions of legislature render action by the industry and a specific program necessary. By Ivy L. Lee. 2,200 words. Electric Railway Journal, November 23. 15 cts.

Is the Zone System the Solution? If practical method of collection can be devised, the zone system furnishes the solution for companies whose average ride exceeds one mile. By Thomas Conway, Jr., professor of finance, University of Pennsylvania. 3,200 words. Electric Railway Journal, November 2. 15 cts.

Is Public Aid Desirable? Service at cost would restore credit of many city railways, but a large number of companies will not be able to secure funds except through public aid in form of direct guarantee. Such aid is advisable from point of view of investors and patrons. By Homer Loring, president, Fort Dodge, Des Moines & Southern Railroad, Boston, Mass. 2,100 words. Electric Railway Journal, November 2. 15 cts.

CITY PLANNING.

Town Planning in Relation to Public Safety. Discussion of problems bearing on public safety in planning, re-planning and re-constructing cities. By Thomas Adams. 1,800 words. Canadian Engineer, October 31. 15 cts.

Problems Arising in Town Planning. "Magna Charta" or urban development; what town planning should include; "tailings" of a city; acquisition of land for town planning. 4,200 words. Canadian Engineer, November 21. 15 cts.

The Design of Street Improvements in War-Time Industrial Housing Development. The Engineering Division of the Bureau of Industrial Housing and Transportation, U. S. Department of Labor, has prepared tentative instructions to designers for street improvements, sewerage, sewage treatment and drainage, and the installation of water-supply, electricity and gas in industrial housing developments. 5 ills., 1,900 words. American City, November. 35 cts.

Construction Plans Developed for the Bronx River Parkway Reservation. Designs of the park commission contemplate development of 1,400 acres by grading and planting; numerous structures are proposed; work to be done by day labor. By L. G. Holleran, principal assistant engineer, Bronx Parkway Commission. 4 ills., 3,800 words. Engineering News-Record, November 14. 20 cts.

STRUCTURES AND MATERIALS.

Hunter Street Bridge, Peterborough, Ont. Will contain longest clear span concrete arch in Canada; 15 arches totaling 1,056 feet in length; arch ring of river span constructed with temporary hinges at crown of skewbacks; Heath-Edwards method of proportioning concrete specified for first time; cinder fill over spandrel arches carries pavement. 7 ills., 2,000 words. Canadian Engineer, November 28. 15 cts.

Twin Peaks Tunnel Completed in San Francisco. New municipal traction project thoroughly modern in every respect; electric drive used extensively in construction. 3 ills., 1,100 words. Electrical Review, November 9. 30 cts.

Saturation of Concrete Reduces Strength and Elasticity. Tests show that moisture content of specimens serves to counteract the benefits of moist curing. By M. E. Laggard, concrete engineer, Emergency Fleet Corporation, Philadelphia. 6 ills., 1,700 words. Engineering News-Record, November 14. 20 cts.

Comments on Construction of Lock and Dam at Troy, N. Y. Modified "Maine" cofferdam; emergency dam; gates operated by compressed air. By Maj. Gen. W. M. Black, chief of engineers. 2,800 words. Canadian Engineer, November 28. 15 cts.

New York Central Relocates Lines to Cross Barge Canal at the Tonawandas. Detour two miles long around heart of cities at once combines two bridges over waterway and solves difficult problem of eliminating grade crossings and occupation of main business streets. By B. S. Voorhees, engineer of grade crossings, N. Y. C. R. R. 2 ills., 4,000 words. Engineering News-Record, November 14. 20 cts.

MISCELLANEOUS.

Municipal Progress in Honolulu. Extensive improvements in every phase of municipal life in Honolulu during the last decade. By Vaughan MacCaughy, College of Hawaii, Honolulu. 4 ills., 1,600 words. American City, November. 35 cts.

Engineering Work in Newton. Edwin H. Rogers, engineer of Newton, Mass., describes a number of interesting features of the work of the engineering department of that city. 400 words. Municipal Journal, November 2. 10 cts.

Promptness in Beginning Public Work. Editorial on the necessity of a general movement to accelerate and encourage public undertakings by creating new demands and absorbing labor released from war industries and by demobilization. 650 words. Municipal Journal, November 23. 10 cts.

Engineers' and Contractors' Estimates. Editorial comment on the duties of engineers to give serious consideration to the making of estimates of cost. 900 words. Municipal Journal, November 2. 10 cts.

The Engineers' Creed. "Code" adapted by the American Association of Engineers concerning the engineer's obligations. 400 words. Municipal Journal, November 9. 10 cts.

Positions for Returning Soldiers. Editorial on the importance of making provision for giving immediate employment to returning soldiers and employees released from government work. 1,100 words. Municipal Journal, November 9. 10 cts.

Stabilizing of Entire Contracting Field Is Purpose of Chicago Meeting. Contractors will organize in convention next week to establish standards of practice. 1,000 words. Engineering News-Record, November 14. 20 cts.

Municipal Repair Shops. Shops and yards of Los Angeles and San Francisco; apparatus of various departments stored and kept in repair; equipment of machine, blacksmith and paint shops; supply department. 6 ills., 2,500 words. Municipal Journal, November 2. 10 cts.

ADVANCE CONTRACT NEWS

ADVANCE INFORMATION BIDS ASKED FOR

CONTRACTS AWARDED ITEMIZED PRICES

To be of value this matter must be printed in the number immediately following its receipt, which makes it impossible for us to verify it all. Our sources of information are believed to be reliable, but we cannot guarantee the correctness of all items. Parties in charge of proposed work are requested to send us information concerning it as early as possible; also correction of any errors discovered.

BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
STREETS AND ROADS.				
Minn., St. Paul	10.30 a.m., Dec. 16	Improvements of streets	H. W. Austin, City Purching Agent.	
Minn., Hastings	noon, Dec. 16	Furnishing one 40 to 60-H.P. gas road tractor for use on heavy road maintenance and gravel hauling	P. A. Hoffman, Co. Aud.	
Minn., Minneapolis	11 a.m., Dec. 16	Furnishing one motor tractor for hauling gravel and road grading	Al. P. Erickson, Co. Aud.	
Miss., Pascagoula	1 p.m., Dec. 18	Paving street and constructing sanitary storm sewers	X. A. Kramer, Engr., Magnolia, Miss.	
Ind., Julietta	10 a.m., Dec. 18	Furnishing one 4-wheel tractor for free gravel roads	Leo K. Fesler, Co. Aud.	
N. Y., Brooklyn	11 a.m., Dec. 18	Furnishing one steam asphalt roller, six back-dumping dirt trucks, two tar melting and gravel heating trucks	Edward Riegelmann, Pres., Borough of Brooklyn.	
N. Y., New York	10.30 a.m., Dec. 18	Furnishing one 5-ton steam asphalt roller	Henry Bruckner, Pres., Boro. of Bronx.	
W. Va., Williamson	Dec. 19	Building 5.5 mi. of road, to cost about \$70,000, involving approximately 500 cu. yd. rubble masonry, grading, clearing, and 1,700 lin. ft. 12-18-ft. vitrified pipe	Elihu Boggs, Co. Clk.	
S. C., Marion	noon, Dec. 20	Construction of highway improvement, involving 3.5 mi. of road and bridges, comprising 50,000 cu. yds. earth embankment and grading, etc.	State Hwy. Comn., Commercial Bank Bldg., Columbia, S. C.	
Wash., Olympia	2 p.m., Dec. 23	Grading, draining and surfacing	James Allen, Secy., State Hwy. Board.	
O., South Euclid	noon, Dec. 24	Grading, draining and constructing 6-ft. sidewalk	F. A. Pease Engr. Co., Marshall Bldg., Cleveland, O.	
Ind., Fort Wayne	10 a.m., Dec. 26	Grading grounds and constructing gravel roadways, etc., at the Allen Co. Tuberculosis Hospital	Will Johnson, Co. Aud.	
Ind., Portland	10 a.m., Dec. 27	Construction of a brick road in Bearcreek Twp.	John Bonifas, Auditor.	
Pa., Pittsburgh	11 a.m., Dec. 27	Improvement of 2.9 mi. of road or highway in Allegheny Co.	Co. Road Comr., Court House, Pittsburgh, Pa.	
Kan., Great Bend	Dec. 28	Building 27.5 mi. monolithic brick road, 20 ft. wide, also grading road bed, work to cost about \$852,000	W. J. Armstrong, Co. Engr.	
Ind., South Bend	10 a.m., Dec. 30	Construction of a concrete road in Union Twp.	Arthur F. Wolf, Auditor.	
Ind., Lakeville	Dec. 30	Improvement of road by surfacing with concrete	County Comrs.	
Ind., Martinsville	2 p.m., Jan. 7	Construction of a brick road in Washington Twp.	Sam Watson, County Aud.	
Ark., Blytheville	Jan. 15	Paving 2 mi. road, 20-50 ft. wide, involving 88,500 sq. yd. 6-10-in. concrete; also curbing, guttering and storm sewerage same, involving 42,600 lin. ft. concrete curbing, 25,580 sq. yd. concrete guttering and 1,600 lin. ft. 15-18-in. vitrified pipe sewerage	Pride & Fairley, Engrs.	
SEWERAGE.				
L. I., Long Island City	11 a.m., Dec. 16	Reconstruction of an outlet sewer involving 233.5 lin. ft. 4 to 5-in. pre-cast concrete pipe sewer, removing and replacing 1,000 lbs. bolts, nuts and spikes, etc.	Maurice E. Connolly, Pres., Borough of Queens.	
N. Y., Albany	noon, Dec. 17	Improvement of the Cayuga and Seneca Canal; repairing manholes of the sewer in Benton Creek, Seneca Falls	W. W. Wotherspoon, Supt. of Public Works.	
N. Y., Brooklyn	11 a.m., Dec. 18	Furnishing one auto educator for the Bureau of Sewers	Edward Riegelmann, Pres., Borough of Brooklyn.	
L. I., Long Island City	11 a.m., Dec. 19	Construction of a sewer and appurtenances, involving 12 to 18-in. vitrified pipe sewers, 25 manholes, 9 basin manholes, 12 inlets, 10 and 12-in. vitrified pipe basin connections, 10 vertical feet risers for house connections, 6-in. spurs, 6-in. vitrified pipe house connection drains, etc.	Maurice E. Connolly, Pres., Borough of Queens.	
N. Y., Brooklyn	11 a.m., Dec. 20	Repairing sewer, involving 790 lin. ft. of arch of 60-in. brick sewer; 60 cu. yds. brick masonry and two manholes	Edward Riegelmann, Pres., Boro. of Brooklyn.	
Fla., Key West	2 p.m., Dec. 20	Furnishing 10-in. vitrified sewer pipe	Supt. of Lighthouses, Key West, Fla.	
Fla., Miami	Dec. 23	Construction of septic tank (spec. No. 3664)	Bureau of Yds. & Docks, Navy Dept., Washington, D. C.	
La., New Orleans	noon, Dec. 23	Sewerage improvements	F. S. Shields, Secy., Sewerage and Water Bd., City Hall Annex.	
Miss., Pascagoula	Dec. 25	Construction of sanitary and storm sewer	X. A. Kramer, Engr., Magnolia, Miss.	
N. Y., Syracuse	1.30 p.m., Dec. 30	Construction of sewer	R. D. Roney, Dept. of Contr. & Supply, Syracuse.	
Ark., Blytheville	2 p.m., Jan. 15	Furnishing 1,600 lin. ft. 15 to 18-in. vitrified pipe storm sewer	Pride & Fairley, Engrs.	

BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
WATER SUPPLY.				
Wis., Madison		5 p.m., Dec. 13	Construction of lock and spillway.....	O. S. Norsman, City Clk.
Cal., Martinez		Dec. 16	Building 1,500,000-gal. reinforced concrete and earth reservoir, 18x24-ft. concrete pump house, steel stand pipe, two triplex pumps and two 25-h.p. motors.....	Olmsted & Gillelen, 1112 Hollingsworth Bldg., Los Angeles, Cal.
Mich., Detroit		2 p.m., Dec. 18	Furnishing two 1,500-gal. fuel storage tanks, two 5-ft. by 8-ft. air receivers and one 1,100-gal. water pressure tank for Keeweenaw waterway.....	Lighthouse Supt., 341 Post Office Bldg., Detroit, Mich.
N. J., Newark		10.30 a.m., Dec. 19	Furnishing, erecting and delivering of six Pitot tubes, with indicating, recording and registering meters, with all necessary appurtenances for a complete installation, to join Pitot tubes to the registering devices at the new water recording station.....	Bureau of Water, City Hall.
Cal., Los Angeles		Dec. 20	Furnishing sheet steel rivets and pipe sections for pipe line and pen-stocks for power plant in San Franciscoquito canyon	W. Mulholland, 645 S. Olive St., Engr.
O., Akron		noon, Dec. 20	For the purchase of a second-hand steel water stand-pipe, 65 ft. high, 25 ft. in diameter, with ladder and 8-in. overflow, and weighs about 40 tons.....	F. M. Connolly, City Engr.
Ill., Galesburg		5 p.m., Jan. 2	Construction of a deep well pumping unit.....	F. M. Connolly, City Engr.
LIGHTING AND POWER.				
Cal., Mare Island		Dec. 16	Installing electric traveling cranes in structural shop (spec. No. 3240).....	Bureau of Yds. & Docks, Navy Dept., Washington, D. C.
O., Cincinnati		noon, Dec. 16	Furnishing 1 smokeless down-draft boiler, to have a rated capacity of not less than 2,100 sq. ft.....	Ernst von Bargen, City Purch. Agent.
Minn., St. Paul		3 p.m., Dec. 19	Alteration in conduit and wiring and lighting fixtures in U. S. Custom House.....	Superv. Archt., Treasury Department, Washington, D. C.
Cal., Los Angeles		3 p.m., Dec. 20	Furnishing sheet steel, rivets and pipe sections, to be used in the construction of a pipe line and penstock for power plant to be constructed in San Franciscoquito canyon	Dept. of Pub. Serv., Knickerbocker Bldg.
FIRE EQUIPMENT.				
Minn., St. Paul		10 a.m., Dec. 16	Furnishing 10,000 ft. of 2½-in. cotton-covered, rubber-lined fire hose with couplings.....	H. W. Austin, City Purching Agent.
BRIDGES.				
Ont., Pembroke		noon, Dec. 14	Construction of two concrete abutments at the crossing of the Little Madawaska River.....	A. F. Stewart, Chief Engr., 68 King St., East, Toronto.
Mass., West Springfield		Dec. 16	Furnishing lumber for building six 90-ft. lattice truss spans on bridge over Connecticut river.....	Bd. of Supvrs., Hampden Co.
Cal., Ventura		11 a.m., Dec. 17	Constructing canyon bridge with timber bulkhead walls, earth fill and guard rails.....	County Supervisors.
O., Marion		Dec. 17	Construction of a bridge in Grand Township.....	County Auditor.
Fla., Marianna		Dec. 19	Construction of reinforced concrete bridge.....	J. A. Maitland, Engr.
Fla., Tallahassee		4 p.m., Dec. 19	Construction of a reinforced concrete arch bridge with steel bascule life span across the Apalachicola river, consisting of seven concrete arches of 110 feet clear span, with a 100-ft. clear channel opening, with an 18-ft. roadway, containing approximately 5,600 cu. yd. concrete, 425,000 lbs. reinforcing steel, 179,500 lbs. structural steel, castings, operating machinery, etc....	Wm. C. Cocke, State Road Comr., State Road Dept., Tallahassee.
Ont., Peterboro		noon, Dec. 20	Construction of reinforced concrete bridge of 15 arches, with approaches, etc., over the Otonabec River.....	R. H. Parsons, City Engr.
S. C., Marion		noon, Dec. 20	Construction of highway improvement, comprising 12 pile timber bridges, requiring approximately 354,000 ft. B. M. heart long leaf pine, 26,000 lbs. hardware, and 775 piles from 20 to 40 ft. long.....	Board of Co. Comrs.
Ont., Peterboro		Dec. 20	Constructing a 15-arch reinforced concrete bridge.....	F. Barber, Engr.
Wash., Olympia		2 p.m., Dec. 23	Constructing two steel bridges over Methow river and grading, draining and surfacing about 1 mi. of state road	James Allen, Secy., State Hwy. Bd.
MISCELLANEOUS.				
Ont., Maynooth		noon, Dec. 14	Removal of present substructure and construction of 7 concrete piers at the Trent River crossing.....	A. F. Stewart, Chief Engr., 68 King St., East, Toronto.
Minn., Duluth		11 a.m., Dec. 14	Furnishing one snow plow to be attached to truck.....	F. D. Ash, City Clerk.
Minn., St. Paul		10.30 a.m., Dec. 16	Furnishing one carload of calcium chloride.....	H. W. Austin, City Purching Agent.
Va., Alexandria		Dec. 16	Installing 11 single "I" beam electric cranes in torpedo assembly plant (spec. No. 3627).....	Bureau of Yards & Docks, Navy Dept., Wash., D. C.
Pa., Wilkes-Barre		noon, Dec. 17	Dredging and widening Solomon's Creek.....	B. F. Finch, City Engr.
Minn., Olivia		Dec. 17	Construction of two judicial ditches, including 5 to 24-in. tiles; bulkheads consisting of approx. 1 ton of reinforced steel rods; corrugated pipe, etc.....	T. S. Hewerdine, Engr.
Wash., Seattle		2 p.m., Dec. 18	Furnishing and placing rip-rap rock for the slope revetment, pier B	T. S. Lippy, Secy., Port Comm. of the Port of Seattle.
N. Y., Brooklyn		11 a.m., Dec. 20	Furnishing four semi-trailers for the bureau of highways.....	Edward Riegelmann, Pres., Boro. of Brooklyn.
N. J., Cape May		Dec. 22	Construction of coal and oil pier (spec. No. 3560).....	Bureau of Yards & Docks, Navy Dept., Wash., D. C.
Pa., Philadelphia		noon, Dec. 23	Furnishing and placing steel framework and railings, concrete floors and parapets, drain gutters and down spouts for 4 station platforms and connecting passages, together with 1 over-passage bridge and stairs, alterations to existing girders, etc.....	Wm. S. Twining, Dir., Dept. of City Transit, Bourse Bldg., Philadelphia.
Va., Alexandria		Dec. 23	Construction of pier and bulkhead (spec. No. 3663).....	Bureau of Yds. & Docks, Navy Dept., Washington, D. C.
Ky., Madisonville		Feb. 3	Construction of Otter Creek ditch, involving 161,207 cu. yd. excavation, 126.48 acres clearing and 2 bridges, 30 ft. each	Basil M. Brooks, Secy., Drainage Board

ROADS AND STREETS

Bessemer, Ala.—In connection with street paving program of city officials, it is thought that contract for paving portions of seven streets will be re-let; contract was annulled some time ago.

Los Angeles, Cal.—For grading, graveling, oiling and paving various roads with concrete board of supervisors, Los Angeles county, will shortly let contract; about \$300,000. F. H. Joyner, county engineer.

Los Angeles, Cal.—City will be asked to vote bonds in the sum of \$4,500,000 for harbor improvements, is a statement made by Clarence H. Matson, traffic manager of Los Angeles harbor department. Money will be used for dredging new channels, for roads and streets in the immediate harbor district, bulkheads, coal bunkers, grain elevators, tanking and vegetable oil wharves and sheds and the handling of machinery.

Porterville, Cal.—Plans to pave several streets with macadam and concrete, to include Olive and Main Sts., also Putnam and Sunnyside Aves.

Moultrie, Ga.—Board of commissioners of Colquitt county plans much road construction; sand-clay.

Savannah, Ga.—From city limits to Port Wentworth, Chatham county plans to build road, about \$200,000.

Lewiston, Idaho.—The board of county commissioners are planning on certain permanent highway improvements in road districts not included in highway districts. Macadam surfacing in districts east of city will be given first call.

English, Ind.—A \$3,600 issue of Crawford county road bonds was sold to the Crawford County State Bank, English, Ind.

Lakeville, Ind.—St. Joseph county commissioners have granted a petition for the improvement of the road leading through Lakeville and connecting the two ends of the Dixie highway by surfacing with concrete.

Muncie, Ind.—Bids received Dec. 21 by treasurer of Delaware county, for sale \$4,800 highway improvement bonds. Earle H. Swain, treasurer.

Terre Haute, Ind.—Bids received Dec. 16 by treasurer of Vigo county for sale \$37,700 highway improvement bonds. E. E. Messick, treasurer.

Fort Wayne, Ind.—The commissioners of Allen county failed to receive any bids for the construction of two macadam roads in Madison and Eel River township.

Monroe, La.—See "Water Supply."

Grand Island, Neb.—An ordinance has passed the city council which provides for the issuance Dist. Paving No. 4 bonds, \$35,000.

Battle Creek, Mich.—Calhoun county will build the following roads in 1919: Duck Lake Rd., Marengo township, 5 miles, estimated cost \$20,000; Burlington and Tekonsha Rd., 2½ miles, estimated cost \$12,000; Partello Rd., Lee township, 3½ miles, estimated cost \$16,225; Homer and Groverville Rd., Homer township, 2 miles, estimated cost \$8,000; Clarendon Center Rd., Clarendon township, 2¼ miles, estimated cost \$11,225; Ellis Corners Rd., Fredonia township, 4 miles, estimated cost \$20,000; Burlington and Cresco Rd., Newton township, 3 miles, estimated cost \$12,000; Pierce Rd., Emmett and Marshall townships, 1 mile, estimated cost \$5,000; Gorsline Rd., Pennfield township, 3¼ miles, estimated cost \$16,000; St. Mary's Lake Rd., Pennfield and Bedford townships, 2.6 miles, estimated cost \$13,000. To cover the cost the board of supervisors has authorized the sale of \$145,000 more of the recent \$800,000 bond issue.

Kalamazoo, Mich.—Kalamazoo county will soon ask bids for gravel and crushed stone for road work in various townships. G. S. Pierson, engr., court house.

Missoula, Mont.—Plans for three road building projects were announced at the headquarters of district No. 1 of the forest service. The plans, which now are awaiting the approval of the Secretary of Agriculture, provide for the building of the West Gallatin road, the Glacier Park-Summit road, and a highway along

the east fork of the Bitter Root River. The first leads from the north entrance of Yellowstone Park to Bozeman, for 40 miles, at a cost of \$140,000, and the second is at the request of the commissioners of Teton county for a road from Glacier Park to Belton on the transcontinental route.

Ridgely Park, N. J.—Village Clerk M. D. Starker will receive sealed bids Jan. 7 for \$42,000 5 per cent. semi-annual 5½-year average street and sewer bonds.

Bath, N. Y.—The Steuben county board of supervisors has authorized the improvement of the following pieces of highway in the several towns of the county, the work to be done at the expense of the county, at an expense of \$2,500 per mile: Wheeler West-Creek, 1 mile; Mayne-Bradford, 1 mile; Urbana-Wayne, 1 mile; Thurston-Campbell, ¾ mile; Addison-Goodhue, 1 mile; Avoca-Wallace, ½ mile; Bradford-Wayne, ¾ mile; Cameron-Canisteo, 1 mile; Canisteo-Bennett's Creek, ½ mile; Corning-Chemung, 1 mile; Greenwood-Bennett's Creek, 1 mile; Jasper-Milwaukee, 1 mile; Pulteney-Boyd Hill, ½ mile; Rathbone-Hedgesville, ½ mile; Woodhull-Tuscarora, 2 miles.

Trenton, N. J.—The state highway commissioners approved an additional allotment of \$30,000 to Essex county from the motor vehicle fund for 1919. This will make a total of \$65,000 advanced to the county from its apportionment for next year.

Winston-Salem, N. C.—Plans are well under way for the construction of a concrete road from Hanes station, connecting with the Forsyth County Club road or highway leading to Lewisville. At a recent meeting of the highway commission a preliminary contract with the state highway commission was entered into and it only remains for the state commission to complete negotiations with the federal road's office for the Government appropriation for the project. Estimated cost, about \$60,000.

Canton, O.—Paved roads through Stark county will be linked wherever small stretches of paving are required, before any large road contracts are undertaken, according to county commissioners. The board inspected a strip of 3 miles between Beach City and Justice Wednesday, preparatory to completing payment for construction. The strip provides a continuous improved road from below Beach City to Cleveland. The paving of a half-mile stretch between Wilmot and Beach City will be ordered within the near future so that the road will be improved to the Holmes county line. The board declares that every road in Stark county will be paved to the boundaries under present plans.

Georgetown, O.—The county commissioners have authorized the improvement of the highway which runs along the Ohio River above Ripley. The engineer will immediately make a survey and prepare estimates of cost. A bond issue will be necessary.

Lima, O.—The county commissioners have granted the road improvement asked in a petition to widen and straighten the Johnson county road in section 4, Bath Township.

Sandusky, O.—County Engineer Schultz says: "The program for expending \$300,000 on good roads in the county will be carried out next year as it was originally planned."

Toledo, O.—City council adopted resolution for the repaving, etc., of Adams St. from Summit St. to Ashland Ave.

Zanesville, O.—Mayor D. J. Evans recommends the improvement of the following streets by either repairing or repaving: Sharon Ave., West Main St., Market St. from Underwood to Greenwood, Underwood St., Eighth St., North 10th St., Sixth St., North Seventh St., and perhaps others.

Tulsa, Okla.—The Capital Issues Committee has approved the sale of \$700,000 road bonds.

Portland, Ore.—The county commissioners have tentatively agreed upon the sum of \$493,397.50 as the amount to be set aside for road building and maintenance in Multnomah county for the year 1919. This figure will be submitted as a recommendation to the official county budget committee which will be appointed shortly. The proposed amount will be distributed among the various road districts substantially as follows: District No. 1, comprising all that part of the county west of the Willamette

and north of the Cornell road, \$82,387.50; district No. 2, west of the river and south of the Cornell road, \$134,500; No. 3, east of the river and south of the Base Line road and west of the Rockwood road, \$53,260; No. 4, east of the Willamette river, north of the Base Line road and west of the Sandy river, \$120,200; No. 5, east of the Rockwood road, south of the Base Line road and west of the Sandy river, \$33,450; No. 6, all that part of the county east of the Sandy river, \$31,100; Columbia river highway maintenance, \$13,000; miscellaneous work, \$23,500. Tentative provisions have been made for the following constructive work: Fifty-four hundred feet macadam work on the Kaiser road, \$12,150; Sky-Line boulevard, relocation and grading from Newberry road to Cornelius pass, \$7,500; macadamizing Sky-Line boulevard from Newberry road to Germantown road, \$13,437.50; Germantown, regrade and macadam, \$10,000; Sky-Line boulevard, from Cornell road to top of mountain, \$5,000; new road to hospital on Marquam hill, \$41,000; hardsurfacing Riverside drive, 1½ miles, \$23,000; paving Pacific highway, from Riverside drive to county line, 1.1 mile, \$21,500; macadamizing Capitol hill road, \$8,500; resurfacing one mile Shattuck road, \$8,500; paving Milwaukee Ave. in Sellwood and necessary repairs, \$11,030; paving four miles Columbia boulevard at Kenton, \$80,000; Fairview road, Sandy road and Base Line road, \$13,500; paving extension of Base Line road, \$10,000; repairs to Section line road and macadamizing Cochran hill, \$14,500; removing slides and general maintenance, Troutdale to Rosses, \$2,500.

Portland, Ore.—City Commissioner Barbur's recommendation that the proposal of the county commissioners to take over certain ends of main thoroughfares near the city limits as county roads, so they may be improved from county funds, was adopted. These street ends include E. 17th St., from Nehalem Ave. to Ochoco St.; Jefferson St., from the end of the hard surface pavement west to the city limits on Canyon road; Taylor's Ferry road, from Macadam St. to the city limits; Macadam road, from Dakota St. to the city limits.

Bethlehem, Pa.—City council on recommendation of City Engineer Fox, rejected the bid for paving of S. Main St.

Braddock, Pa.—Bids were rejected for grading and repaving Woodway from Eighth St. eastward about 400 ft. W. P. Conway, boro. secy.

Lead, S. D.—The city commissioners have authorized a bond issue of \$1,500 for paving.

Nashville, Tenn.—The Tennessee State Highway Commission at a meeting held in Nashville Nov. 29 approved the report of the United States Government engineers who had made surveys and plans for the construction of the proposed road from the South Ford bridge through Shady and Mountain City to the North Carolina line near Trade, Tennessee. The plans provide for one of the greatest highways yet constructed in this section, and the 33 miles of road through Sullivan and Johnson counties to cost approximately \$276,000. The work will be done under the direction of the United States Government engineers in co-operation with the state highway engineer.

Canadian, Tex.—The attorney general has approved an issue \$6,000 street improvement bonds.

Meridian, Tex.—Bosque county the following road bonds have been approved by the attorney general, Dist. No. 3, \$50,000; Dist. No. 1A, \$40,000; Dist. No. 7, \$10,000; Dist. No. 8A, \$40,000.

Richmond, Va.—The state has more than \$1,600,000 in funds for highway improvement when conditions are improved.

Yakima, Wash.—Well-signed petitions for the construction of 19 miles of hard-surfaced road under the Donohue road law were filed with the county commissioners. The commissioners favor granting the petition and will have surveys made in 1919, construction to be done in 1920. The petitions call for a 10-mile extension of bitulithic road from Piland bridge to Zillah and for a 9-mile road connecting Sunnyside and Grandview. The commissioners already have adopted plans for the construction of a 12-mile road connecting Yakima and Naches and for four miles between Sunnyside and Outlook. Work will be completed in 1919 at a cost of about \$180,000. The roads petitioned for will cost about the same.

Winfield, W. Va.—Putnam county rejected bids for 4 miles road improvement in Curry dist.; will readvertise. G. H. Davis, Poca, W. Va., engr.

Appleton, Wis.—Outagamie county board of supervisors has authorized the issuance of \$272,000 road bonds.

Sheboygan Falls, Wis.—Plans are being drawn for approximately 10,000 sq. yds. reinforced concrete paving, combination curb and gutter, \$25,000. Jerry Donahue, 720 New York Ave., engr.

Batisseau, Que.—One mile of national highway and protection walls damaged during recent floods will be rebuilt by the Provincial Government.

BIDS RECEIVED AND CONTRACTS AWARDED.

(*Indicates Contracts Awarded.)

Long Beach, Cal.—Fairchild-Gilmore-Wilton Co., Pacific Electric Bldg., Los Angeles, at \$39,282, for grading and paving Cherry Ave., from Eleventh to Ocean Ave. Board of public works.

Long Beach, Cal.—Fairchild-Gilmore-Wilton Co., Pacific Electric Bldg., Los Angeles, only bidder for grading and paving Perris Ave. from 17th to Nadeau Sts., 5½-in. concrete with 1½-in. asphalt macadam surface, about \$15,000.

Chicago, Ill.—The Great Lakes Dredge and Dock Co., this city, low bidder for constructing the north and south plazas of the Michigan Ave. "boulevard link," at \$5,300,000.

Chicago, Ill.—H. Johnson & Co., for 6-ft. cement sidewalk on the north side of West 116th Pl. from the west line of Lowe Ave. to the east line of South Halsted St.; Robt. R. Anderson Co., for 14-ft. cement sidewalk on the south side of West Monroe St. from the west line of South Dearborn St. to the east line of South Clark St., and 25-ft. cement sidewalk on the east side of North Wabash Ave. from the south curb line of East Lake St. to the north curb line of East Randolph St. Board of local improvements, Michael J. Faherty, president; Edward J. Glackin, secretary.

Boston, Mass.—James Doherty for alterations in Charles St., westerly side, from Beacon St. to Boylston St.

Boston, Mass.—Rowe Contracting Co., for planking and paving Harvard bridge with wood slab pavement, Boston to Cambridge, over Charles River. Bids opened Aug. 12, 1918, \$135,400. Contract approved Nov. 27.

Saginaw, Mich.—F. Birchmeier, Chesaning, Mich., at \$23,064.35, for Center Line road, by Saginaw county. David A. Nicol, engr.

Tucumcari, N. M.—D. La Rue, Palestine, Tex., for gravel surfacing 21 mi. Tucumcari-Montoya Rd., 16 ft. wide, \$102,341, by Quay county.

St. George, N. Y.—Uvalde Asphalt Paving Co., 1 Bway, New York City, \$29,995, repairing spaces between tracks and rails of Midland Ry. on Vanduzer St., from Richmond turnpike to Hannah St.; from Swan to Wright Sts., and from slag block pavement south of Broad St. to Vanderbilt Ave., bituminous concrete on present foundation. Work involves 10,650 cu. yds. bituminous concrete and 200 cu. yds. 6-in. concrete foundation. C. D. Van Name, president, Richmond borough.

Canton, O.—F. A. Downs Construction Co., for \$13,727, for building 265 ft. of the Lincoln Highway in the vicinity of Minerva, County commissioners.

New Castle, Pa.—J. Clyde Gilfillan, Johnson Bldg., at \$2,400, for grading Glenmore Blvd., between Highland Ave. and a point 150 ft. east of Delaware Ave. J. H. Mulholland, city engr., city bldg.

Barstow, Tex.—W. E. Hamilton, Mineral Wells, Tex., for building 17 mi. road on State Highway No. 17, about \$36,371, by Ward county.

Decatur, Tex.—J. F. Harner, Sweetwater, Tex., for grading, graveling and constructing drainage structures of 41.5 miles of Meridian highway, involving approximately 76,000 cu. yds. of excavation, 31 miles road machine work, 55,000 cu. yds. of gravel surfacing, 100 drainage structures, including 12 bridges, 10 concrete and two steel, at \$208,000.

Ruby, Tex.—J. F. Horn, Sweetwater, by Fisher county, for building roads in District No. 3, about \$60,000 available.

Montesano, Wash.—Ward & Jarvis, Centralia, Wash., for constructing highway from the end of Olympic highway

at the lake to the hotel at the north end of Lake Quinault.

St. John, N. B.—Morrison & Newlands, Hampstead, N. B., for constructing 10,000 ft. of granite curbstone by city council.

SEWERAGE AND SANITATION

Wilmington, Cal.—Plans are being prepared for installing 9.25 mi. sewer in Gulf Ave.; about \$150,000. W. F. Knowlton, sewer engineer.

Bedford, Ind.—City has plans drawn for sewer system, N. W. Section, Dist. No. 4, 5 or 6 miles vit. pipe, cost \$20,000. J. W. Mallott, city hall, engr.

Gary, Ind.—City council asking bids on local sewer No. 87, \$2,690.

Ashland, Ky.—City Engineer Thomas Boggess and City Clerk W. A. Manning are ready for bids on a sanitary sewer system for Haney and Williams Sts. Plans are drawn.

Monroe, La.—See "Water Supply."

Ferndale, Mich. (Royal Oak, P. O.)—G. Jerome, engineer, 1331 Majestic building, Detroit, has been engaged by the village to make preliminary surveys and plans for sewerage system; about \$37,000.

Pass Christian, Miss.—City voted to issue \$2,000 bonds for extending sanitary sewer.

Ridgefield Park, N. J.—See "Streets and Roads."

Rochester, N. Y.—S. N. Bond & Co., of New York, were the successful bidders for the 4 months' sewer notes, \$20,000. H. D. Quimby, city comptroller.

Sea View, S. I., N. Y.—Engineer Frank Sutton, 90 Broadway, N. Y. City, drawing plans for a sewer and water supply at Sea View Hospital. Bird S. Coler, comr. dept. of pub. charities, Municipal Bldg., New York City.

Bucyrus, O.—The manufacturers Home Building Co. has acquired a plot on Maple St. which will be graded and sewered and on which it is proposed early in the spring to erect 27 moderate priced homes. City Engineer Nicherheiser is now preparing plans for the sewers.

Lancaster, O.—An ordinance authorizing the issuance of storm sewer bonds, \$10,000, has passed.

Lima, O.—Capital Issues Committee at Washington has approved the \$300,000 sewer bond issue to finance the construction of the Collett Ave. relief sewer. Mayor Bailis Simpson.

Youngstown, O.—The ordinance to construct a sewer in Maple Ave. has passed the council. M. F. Hyland, chief of the council, will invite bids as soon as plans are ready.

Zanesville, O.—Mayor D. J. Evans recommends the completion of plans and specifications for a sanitary sewerage system in the old seventh ward.

Hominy, Okla.—See "Water Supply."

Coatesville, Pa.—For building storm sewer system in Gibbons Run, C. A. Niles, city engineer, will take bids in February. A. Potter, 30 Church St., New York City, constructing engineer.

Brenham, Tex.—Construction of a sewer system is considered by the city.

Eastland, Tex.—City is considering extending sewer system.

Longview, Tex.—Citizens will vote Dec. 17 on issuing sewer bonds, \$25,000.

Everett, Wash.—City will advertise for bids for construction of a sewer in its Bailey addition.

Spokane, Wash.—Citizens may be asked to authorize the construction of a new and enlarged sewer in the business district.

Eastview, Ont.—Town council considering the construction of drainage system. Patterson & Byrne, 72½ Sparks St., Ottawa, engr.

BIDS RECEIVED AND CONTRACTS AWARDED.

(*Indicates Contracts Awarded.)

Montgomery, Ill.—John McKimmie, Aurora, Ill., for sanitary sewer and purification tank here.

Milwaukee, Wis.—Klug & Smith Co., Milwaukee, for furnishing the pump well and screen chambers to be used in connection with the Jones Island sewerage disposal plant; \$107,000; for furnishing the gate valves, Flower Stephens Manufacturing Co., Detroit, Mich., \$13,190; the Coffin Valve Co., Boston, Mass., for furnishing the valves and hydrants for \$33,148.

Hawkesbury, Ont.—Archambault & Leclair, 616 St. Denis St., Montreal, for construction of sewers on Laurier and McGill Aves., costing \$12,000.

Brantford, Ont.—D. O. Johnson for constructing a storm sewer at Holmesdale, \$22,000.

WATER SUPPLY

Camas, Ida.—Camas Mutual Irrigation District voted to issue \$675,000 reservoir and canal system bonds.

Russell, Ky.—E. W. Smith, clerk of the city, will receive sealed bids for the sale of water works, equipment and franchise, beginning Nov. 30, 1918.

Monroe, La.—The issuance of the following bonds has passed the Capital Issues Committee: Filtration plant, \$100,000; paving, \$20,000; incinerating plant, \$15,000; sewer, \$15,000.

Wyandotte, Mich.—City lets contract this month for furnishing and laying a 24-in. submerged intake pipe and for constructing a rapid sand filtration plant, addition to existing pumping station and miscellaneous work. W. C. Lambert, M.D., mayor.

St. Paul, Minn.—City has sold to E. H. Rollins & Sons an issue 10-year refunding water bonds, \$235,000.

Clay Center, Neb.—City has sold to Merkle Machine Co., of Kansas City, \$3,500 of the \$4,000 water extension bonds. Bids for the remaining \$500 will be received at any time. J. E. Ray, city clerk.

Wharton, N. J.—For building water works system city engr. will take bids about Feb. 1, about \$150,000. A. Potter, 30 Church St., New York City, consulting engr.

Olean, N. Y.—To proceed with the erection of the new filtration plant the water commissioners have asked the city council to authorize the issuance of certificates of indebtedness \$50,000.

Sea View, S. I., N. Y.—See "Sewerage."

Dayton, O.—Authorization was given City Manager Barlow by the city commission to purchase a pump and motor for the water works department at a total cost of \$6,971. The motor involves an expenditure of \$4,975, and the pump \$1,996.

Lancaster, O.—The construction of a sewer will mature about Dec. 15 in Washington and Mulberry Sts. City also contemplates a \$10,000 sewer in Utica St. Walter Graf, city engr.

Rocky River, O.—Village received bids Dec. 26, water works purchase \$63,000 bonds.

Cushing, Okla.—Geo. W. and J. E. Pierisol, of Oklahoma City, successful bidders for an issue waterworks bonds, \$150,000.

Hominy, Okla.—City has sold an issue water and sewer bonds, \$50,000. Leander Hall, city clerk.

Amity, Ore.—Sealed bids received Dec. 20 for \$3,000 water works bonds. W. R. Osborne, Recorder.

Pendleton, Ore.—Citizens Nov. 5 voted in favor of issuing water extension bonds, \$20,000.

Philadelphia, Pa.—Water meters for every private dwelling and building in the city are provided for in an ordinance submitted to council by a special joint committee of the two chambers, at cost of property owners.

Carthage, Tex.—An election may be held to vote on issuing water works bonds, \$100,000.

Houston, Tex.—Plans are being prepared for deep wells, pumps, motors and electrical generator for central water plant; change air lift to centrifugal pump lift. E. E. Sands, city engineer.

Norfolk, Va.—For improving waterworks system, including the replacing of

four wooden filters with concrete filters, installing 15,000,000-gal. electrically-driven pumps, also building sewer from plant to Lake Wright, etc., city is considering the issuance of \$70,000 bonds. W. H. Taylor, city engineer.

Seattle, Wash.—The Capital Issues Committee is to be asked by the city of Seattle to sanction an issue of \$500,000 in bonds for getting the Swan Lake water system under way.

Riverton, Wyo.—Sweet, Causey, Foster & Co., of Denver, successful bidders for an issue water extension bonds, \$23,500. Town clerk.

Torrington, Wyo.—City voted \$10,000 bonds to extend waterworks system.

Windsor, Ont.—City will vote, Jan. 1, on \$350,000 bonds, for sand filter to have 12,000,000 gal. daily capacity. R. W. Pratt, Hippodrome Bldg., Cleveland, O.

BIDS RECEIVED AND CONTRACTS AWARDED.

(*Indicates Contracts Awarded.)

Worthington, Minn.—W. Danforth, Germania Life Bldg., St. Paul, building filter plant for South Western Minnesota Sanitarium, \$13,660. By Nobles county.

Weston, Mo.—Malley & Kelly, 503 Mas Bldg., Kansas City, Mo., for improvements to water works. City Council, T. Riley, City Clk.

New York, N. Y.—Following bids received by F. L. Dowling, president, Manhattan borough, furnishing and delivering liquid chlorine, from Electro Bleach & Gas Co., 18 E. 41st St., \$6,120; A. Hoffman & Co., Providence, R. I., \$6,900; furnishing and delivering sulphate of copper, from J. Grieg, 39 Cortlandt St., \$2,901; J. A. Miller, 47 W. 34th St., \$2,907; Knickerbocker Supply Co., 149 Church St., \$3,045.

Hamilton, O.—A. J. Yawger, of Indianapolis, Ind., for the water works improvements here at \$50,000. F. E. Weaver, city engr.

Yorktown, Va.—Chicago Bridge & Iron Works, 30 Church St., New York City, \$26,300 (100 days); Memphis Steel Constr. Co., McGee Bld., Pittsburgh, Pa., \$26,750 (90 days); Pittsburgh-Des Moines Steel Co., 959 Munsey Bldg., Washington, D. C., alternate bid \$24,800 (100 days), and \$26,600 (75-110 days), bidders Dec. 2 installing two 100,000-gal. steel water tanks and towers and appurtenances at Naval Mine Depot. Bureau Yards and Docks, Navy Dept., Washington, D. C.

Seattle, Wash.—Des Moines Bridge & Iron Co., of Des Moines, Ia., for furnishing 500,000-gal. steel water tank and put same in place in Fauntleroy Crest Addition on proper steel supporting tower, \$42,760. Board pub. works.

LIGHTING AND POWER

Wauchula, Fla.—See "Miscellaneous."

Stater, Mo.—For enlarging electric light plant improvements, to include installation of boilers, etc., city voted \$25,000 bond issue.

Atlanta, Ga.—Georgia Railway & Power Co. will improve sub-stations; at Boulevard station capacity of Lindale line transformer will be increased to 6,000 K.V.A. by installations of two banks of three 1,000 K.V.A. transformers each, with extra transformers for each bank; extra transformers will be installed at Newnan sub-station.

Divernon, Ill.—The municipal electric light plant was recently destroyed by fire, causing a loss of about \$50,000.

Tutwiler, Miss.—City voted \$8,000 bonds for constructing electric light plant.

Malta, Ill.—The installation of a larger engine in the future in the municipal electric light plant is under consideration. S. S. Plapp is manager.

Holden, Mo.—The Island Creek Coal Co. is planning to install two 400-hp. boilers in its power plant.

Marshfield, Mo.—Citizens voted Nov. 8 in favor of issuing \$15,000 electric light bonds.

Niagara Falls, N. Y.—It is reported that plans have been submitted to the United

States Government by Dr. T. Kenard Thomson, 50 Church St., New York City, for the construction of a hydroelectric plant to develop approximately 200,000 hp. additional power. The plans provide for the construction of a new dam across the Niagara River, 4 miles below the falls. Cost is estimated at \$50,000,000. About two years will be necessary to carry out the project.

Munich, N. D.—The proposed issue of \$3,500 electric light bonds have been authorized.

Paris Island, S. C.—Stated that navy department, Washington, has plans for power house and heating system to cost \$97,000.

BIDS RECEIVED AND CONTRACTS AWARDED.

(*Indicates Contracts Awarded.)

Bunnell, Fla.—Fairbanks, Morse & Co., Atlanta, Ga., for installation of alternating lighting system which will supersede existing direct current installation.

Crescent City, Fla.—Fairbanks, Morse & Co., Atlanta, Ga., for completing electric light plant, including pole transformers, \$12,000.

Mapleton, Man.—The Dominion Bridge Co., Canada Bldg., Winnipeg, has the steel contract in connection with the erection of a \$10,000 power house for the Manitoba Steel Foundry Co.

FIRE

Bay Ridge, N. Y.—Bureau yards and docks, Navy Department, Washington, D. C., plans to install fire alarm system; spec. \$695; about \$2,500.

Larchmont, N. Y.—Village will take bids Dec. 16, \$2,500 fire alarm system bonds. Eugene D. Wakeman, village clk.

Schenectady, N. Y.—City comptroller has purchased for the police pension fund fire bonds to the amount \$5,500.

BRIDGES

Boonville, Ind.—Plans and specifications for the proposed building of the following steel bridges were submitted to the Warrick county commissioners: Graulick, Ben Wagner, Ruston, Thomas Davis, Purdue, Hemenway and Chandler road. These bridges were to have been constructed some time ago, but, owing to the war, the plans were delayed.

Cleveland, Miss.—Supervisors' district No. 4 of Bolivar county voted \$50,000 of bonds for building bridges over Sunflower River.

Watertown, N. Y.—Preliminary work on the new double deck Court St. bridge will be started Jan. 1, according to a decision reached by the common council. City Engineer E. W. Sayles.

Cleveland, O.—The raising of the building ban will result in the early construction of the following bridges: Cleveland, the Huron-Lorain bridge, costing \$5,000,000; Ashtabula railroad subway, costing \$400,000; Hamilton paving viaduct, costing \$40,000; Springfield, bridges, to cost \$46,000; Urbana, bridges, to cost \$18,000; Celina, bridges, to cost \$15,000; Sandusky, bridges, to cost \$2,000,000; Lorain, bridges and paving, costing \$185,000; Troy, two bridges, costing \$50,000; Dayton, bridges, to cost \$15,000; Piqua, bridges, costing \$35,000; Ravenna, bridges, \$15,000; Warren, bridges, to cost \$150,000; Bowling Green, bridges, costing \$160,000.

Lima, O.—City council has directed the city engineer to prepare plans for the new viaduct across Lake Erie tracks at Wapakoneta road crossing with a roadway of not less than 32 ft.

BIDS RECEIVED AND CONTRACTS AWARDED.

(*Indicates Contracts Awarded.)

Rockford, Ill.—F. E. Marsh & Co., Jefferson, Ia., for constructing the Camp Grant bridge in Rockford township, Winnebago county.

Baltimore, Md.—McAleer Construction Co., of this city, for constructing bridge for the Baltimore & Ohio Railroad at \$20,000.

Duluth, Minn.—American Bridge Co., of this city, for straightening five bridges between here and Proctor with steel; also renewing covering over viaduct at approximately \$50,000.

Devon, N. B.—D. C. Burpee & Son, for construction of Renous River mouth bridge, costing about \$29,000.

Ste. Anne Chicoutimi, Que.—D. De Santis, 3180 St. Lawrence Blvd., Montreal, for constructing a concrete bridge.

MISCELLANEOUS

Washington, D. C. (Bureau of Foreign and Domestic Commerce, Department of Commerce).—A Belgian civil engineer in England desires to purchase sectional cast-iron boilers of various sizes in shipments of about 40 per month; radiators, about 18,000 square feet monthly; pipes, valves, fittings, tools, ventilators, electric automatic pumps for supplying water under pressure; small steel boilers of the vertical or horizontal type, under 200 square feet heating surface; and electric lifts. Quotations may be made f. o. b. New York. Payment will be made three months after shipment. These goods are for direct shipment to Belgium. References. Refer to Opportunity No. 27710.

Washington, D. C. (Bureau of Foreign and Domestic Commerce, Dept. of Commerce).—An American missionary in India wishes to purchase Diesel or semi-Diesel engines of from 15 to 35 horsepower, directly connected to a generator and best storage batteries. The engine and generator should include switch-board and 3,000 ft. of copper cable wire. Quotations should be made f. o. b. San Francisco. Reference. Refer to opportunity No. 27708.

Bessemer, Ala.—Jefferson county commissioners decided to complete courthouse at Bessemer and construction bids will be invited at once. Foundation for building already constructed. Chairman county commissioners, Birmingham, Ala.

Hartford, Conn.—The Equitable Trust Co. of New York recently purchased an issue of permanent improvement notes, \$800,000.

Lyons, Ga.—Erection of court house for Toombs county is being urged. Chairman, board of county commissioners.

Mason City, Ia.—The city council has authorized an issue of \$23,324.22 funding bonds.

Causensieu Par, La. (Sulphur Drain. Dist. No. 4, P. O. Lake Charles).—On Dec. 17 a special election will be held at Choupique to vote \$125,000 Sulphur Drain. Dist. No. 3 bonds. Edward J. Rusillon is secretary and treasurer.

Bronxville, N. Y.—Village will offer for sale in January an issue of funding park bonds, \$65,000. Frank Dinsmore, village clerk.

Elyria, O.—Mayor Asoph Jones will recommend to the council that it take some action at once looking to the erection of a memorial building in honor of the soldiers from this community who have given their lives for their country. The character of the structure proposed is now being given some attention by the city administration.

Plymouth, O.—This town will consider at an early date the erection of a suitable memorial for the men who have served the county in the world war. A liberty building has been suggested. This structure if agreed to would be used as a municipal building. The local chamber of commerce will take up the matter at once.

Youngstown, O.—J. N. Highly, Jr., president of the council, will introduce into the council a resolution in favor of the erection of a \$500,000 hospital in this city. This will be in the nature of a great memorial for the soldiers in the great war.

Wauchula, Fla.—W. L. Slaton & Co., Toledo, O., purchased municipal bonds as follows: Electric light plant, \$24,000; cemetery addition, \$4,000; refunding, \$14,000.

Penn., Ind.—Bids received January 2, by city clerk, for sale \$40,000 municipal bonds, 5 per cent., ten years. H. L. Baltimore, city clerk.

Tipton, Ind.—J. M. Waugh, of Crawfordsville, Ind., successful bidder for the improvement bonds, \$7,500. C. B. Law, city clerk.

Ashtabula, O.—City Auditor A. I. Faulkner will receive sealed bids, Dec. 28, for \$140,000 4½ per cent. semi-annual 10¼-year average grade crossing bonds.

Conroy, O.—Bonds will be sold by the board of education Dec. 20, to provide \$2,000 in funds, to be applied toward erecting and equipping a new school building.

Baker, Ore.—R. Luper, La Grande, preparing plans for Sparta Irrigation Dist., Baker county, for irrigation system to irrigate 14,000 acres of land from Eagle River.

Carbondale, Pa.—City council passed resolution providing for plans and specifications to be prepared by the engineer for the installation of a comfort station in the municipal building.

Philadelphia, Pa.—Bureau yards and docks, Navy Department, Washington, D. C., plans extending trolley line; spec. 3698.

Charleston, S. C.—Bureau Yards and Docks, Navy Dept., Washington, D. C.,

plans to install boilers and super-heaters. Spec. No. 3707. About \$50,000.

Yakima, Wash.—The Yakima Commercial Club has adopted a resolution asking that the city government take steps toward construction of a new city hall and establishment of a city park.

Charleston, W. Va.—Bureau Yards and Docks, Navy Dept., Washington, D. C., plans to install boilers and super-heaters. Spec. No. 3707. About \$120,000.

Wheeling, W. Va.—The council has given permission to the Liberty Transit Co. to bridge the harbor at the Wheeling wharf to facilitate dockage for incoming and outgoing steamers.

Milwaukee, Wis.—The \$250,000 municipal market plan and the creation of a marketing board, outlined by Secretary Osmore R. Smith, will be incorporated in a common council bill.

Superior, Wis.—A proposition to issue \$100,000 city armory and auditorium bonds has been voted.

Drumheller, Alta.—The municipality will shortly be asked to vote on a by-law for the erection of a hospital costing \$36,000. Architect, Mr. Blakey, Parliament Bldg., Edmonton.

London, Ont.—The city council contemplates the erection of a city hall costing \$250,000. S. Baker, clerk.

France—The rehabilitation of the coal mines at Lens requires pumping out the

water which the Germans poured into the mines and the renewal of surface equipment, hoisting apparatus, electrical generating stations, boilers, etc. The purchase and distribution of the material is in the hands of technical commission, affiliated with the Comptoir Central d'achats industriels pour les regions envahies (whose head office is at 40 rue du Colisee, Paris).

BIDS RECEIVED AND CONTRACTS AWARDED.

(*Indicates Contracts Awarded.)

Anacostia, D. C.—G. B. Mullin Co., 3303 11th St., Washington, bidder (1) \$11,520 (49 days), (2) \$1.44 for earth fill at naval air station, (1) work complete, (2) per cu. yd. for material in place, including excavation. Bureau Yards and Docks, Navy Dept., Washington, D. C.

Mitchell, Neb.—*Omaha Structural Steel Bridge Co., Omaha, for constructing siphon or flume at Horse Creek at \$10,472.

Seattle, Wash.—*Rockland Sprinkler Co., 532 1st Ave. S. for the installation of sprinkler systems in the boat shop and joiner shop at the Puget Sound Navy Yard, \$12,700. Bureau Yards and Docks, Washington, D. C.

TOO LATE FOR CLASSIFICATION

BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
STREETS AND ROADS.				
S. C.	Marion	Dec. 20	Construction of 3.5 mi. of road	Co. Comrs.
SEWERAGE.				
N. Y.	Brooklyn	11 a.m., Dec. 20	Repairing sewer	Edward Riegelmann, Pres., Borough of Brooklyn.
Fla.	Key West	2 p.m., Dec. 20	Laying 780 ft. 10-in. vitrified sewer pipe	Supt. of Lighthouses.
La.	New Orleans	noon, Dec. 23	Sewer and waterworks improvements	F. S. Shields, Secy., Sewerage and Water Board.
WATER SUPPLY.				
N. J.	Newark	10.30 a.m., Dec. 19	Furnishing five Pitot tubes with indicating, recording and registering meters with all necessary appurtenances	Engr. and Supt., Bureau of Water, City Hall.
LIGHTING AND POWER.				
N. Y.	New York	11 a.m., Dec. 23	Installing heating and ventilating apparatus, temperature regulation apparatus, and electric equipment in public schools in the borough of the Bronx	C. B. J. Snyder, Supt. of School Bldgs., Manhattan, N. Y.
BRIDGES.				
Quebec	Ste. Adelaide de Pabos	noon, Dec. 20	Construction of an iron and concrete bridge, with dumps at two ends, over the Grand Pabos River	J. Rousseau Bastien, notary, Chandler, Quebec.
S. C.	Marion	Dec. 20	Construction of bridges	Co. Comrs.
MISCELLANEOUS.				
Pa.	Johnstown	noon, Dec. 17	Collection of garbage, rubbish and dead animals	W. W. Campbell, Supt. of Pub. Safety.
Minn.	Warren	1 p.m., Dec. 20	Construction of county ditch No. 32, involving 19.5 mi. with 4-ft. wide bottom, 3 mi. with 6-ft. wide bottom and 4.5 mi. average depth, 6-ft. and 8-ft. wide bottom; 3 mi. enlarging old ditch; excavating 260,275 cu. yds. culverts; 40 auto gates; 1 reinforced concrete culvert, 5 steel bridges, 15 wooden bridges	Irving E. Quist, Engr.
Minn.	Warren	10 a.m., Dec. 20	Construction of county ditch No. 31, involving 10 mi. 4-ft. bottom, and side slopes 1 to 1; 84,650 cu. yds. excavation; culverts, with auto gates; reinforced concrete culverts	Irving E. Quist, Engr.
N. Y.	Brooklyn	11 a.m., Dec. 20	Extension of present pile and timber bulkhead on municipal bath building, Coney Island; alterations and repairs, including electric work in Borough Hall, Brooklyn	Edward Riegelmann, Pres., Borough of Brooklyn.
N. Y.	New York	Dec. 23	Reconstructing and timbering shaft of subway	Pub. Serv. Commission.

STREETS AND ROADS.

Stockton, Cal.—No bids were received for street improvement assessment bonds, \$179,786.12. The bonds will be taken by the Clark & Henry Construction Co., of Stockton. G. W. Pulich, city clerk.

Minneapolis, Minn.—The following item has been included in next year's budget by F. W. Coppelen, city engineer: Paving, \$489,000; sewers, \$225,000; water-

works, \$350,000; bridges, \$25,000; sidewalks, \$150,000.

Irrington, N. J.—A resolution asking the board of freeholders to pave Stuyvesant Ave., Irrington, a county road, with a durable pavement, from the Newark line to the Union County line, was adopted by the Irrington town commission; also an ordinance to curb the thoroughfare was passed.

Lancaster, O.—Walter Graf, city engineer, will proceed with the preparation

of plans for the paving of S. Broad St. and the construction of a sewer.

Portsmouth, O.—County Engineer John Harper has been in conference with the state highway commissioner at Columbus relative to the road allowance for road building in Scioto county the coming year. An extensive road building campaign will be carried out.

Woodfield, O.—The First National Bank, of Woodfield, was the successful bidder for an issue street improvement

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Bids received until December 30, 1918.

Construction of a Rapid Sand Filtration Plant

WYANDOTTE, MICH.

Sealed proposals for constructing a rapid sand filtration plant, addition to existing pumping station and miscellaneous work, addressed to the City Clerk of Wyandotte, and endorsed "Proposals for Rapid Sand Filtration Plant," will be received at the City Hall, Wyandotte, Mich., until 8:00 P. M., eastern standard time, on December 30, 1918, and will be publicly opened and read at that time.

Each proposal shall be accompanied by a certified check for five thousand dollars (\$5,000), drawn payable to the City Treasurer of Wyandotte as security for the acceptance of the contract.

The City of Wyandotte reserves the right to accept any bid, reject any or all bids, or waive any informalities in favor of the city, should it deem it to be to the best interests of the city to do so.

Plans, specifications and forms of proposals and contracts may be obtained at the office of the City Clerk, Wyandotte, Mich., or at the office of R. Winthrop Pratt, Consulting Engineer, Hippodrome Building, Cleveland, O.

A deposit of ten dollars (\$10) will be required, which deposit will be returned after bids are opened, if the plans and specifications are returned in good condition.

CITY OF WYANDOTTE,

WALTER C. LAMBERT, M.D., Mayor.
EDWARD C. BRYAN, City Clerk.

Bids received until December 30, 1918.

Furnishing and Laying 24" Pipe

WYANDOTTE, MICH.

Sealed proposals for furnishing and laying a 24-inch submerged intake pipe for the City of Wyandotte, Michigan, addressed to the City of Wyandotte, Mich., and endorsed "Proposal for Submerged Intake Pipe," will be received at the City Hall, Wyandotte, Mich., until 8:00 P. M., eastern standard time, on December 30, 1918, and will be publicly opened and read at that time. Each proposal shall be accompanied by a certified check for three thousand dollars (\$3,000), drawn payable to the City Treasurer of the City of Wyandotte, as security for the acceptance of the contract.

The City Commission reserves the right to accept any bid or reject any or all bids, or waive defects in bids that may be in favor of the said city, should it deem it to be to the best interests of the City of Wyandotte to do so.

Plans, specifications and forms of proposal and contract may be obtained at the office of the City Clerk, Wyandotte, Mich., and at the office of R. Winthrop Pratt, Consulting Engineer, Hippodrome Building, Cleveland, O.

THE CITY OF WYANDOTTE,
WALTER C. LAMBERT, M.D., Mayor.
EDWARD C. BRYAN, City Clerk.

Bids received until December 30, 1918.

Sewer Constructions

SYRACUSE, N. Y.

Sealed proposals will be received at the office of the Board of Contract and Supply, Monday, December 30, 1918, at 1:30 P. M., for furnishing materials and constructing Section "A" of west branch of the Seventeenth Ward sewer—Lombard Street, from Maple Street to a point about 1,580 feet easterly, in accordance with plans and specifications on file in the office of the Board of Contract and Supply, City Hall. A certified check for five per cent. (5%) of the total amount of each proposal must accompany each proposal. Plans and specifications will be sent to contractors on receipt of five dollars (\$5.00) deposit.

R. D. RONEY,
311 City Hall, Syracuse, N. Y.

TREASURY DEPARTMENT, Supervising Architect's Office, Washington, D. C., November 29, 1918.—SEALED PROPOSALS will be opened in this office at 3:00 P. M., December 27, 1918, for a toilet room in the United States Post Office and Court House at Trenton, N. J., in accordance with the specification and drawing, copies of which may be had at this office or at the office of the Custodian, Trenton, N. J., in the discretion of the Supervising Architect. JAS. A. WETMORE, Acting Supervising Architect.

TREASURY DEPARTMENT, Supervising Architect's Office, Washington, D. C., November 12, 1918.—SEALED PROPOSALS will be opened in this office at 3:00 P. M., December 10, 1918, for remodeling toilet room, etc., in the United States Post Office, Hannibal, Mo., in accordance with drawing and specifications, copies of which may be had at this office or at the office of the Custodian, Hannibal, Mo., in the discretion of the Supervising Architect. JAMES A. WETMORE, Acting Supervising Architect.

ROADS AND STREETS

(Continued from page 26.)

Seattle, Wash.—Application to the capital issues committee at Washington, D. C., was made by Corporation Counsel Walter F. Meier for approval of a bond issue of \$18,000, with which to meet condemnation awards to property owners on Eastlake Ave., between Howell and Roy Sts. Under an ordinance passed by the council this section is to be improved by widening, five feet being added at each side of the street.

Seattle, Wash.—Plans have been completed by County Engineer Sam Humes and bids will likely be called in the near future by the board of King county commissioners for the construction of what is known as the Boddy-Hindle road on the east side of Lake Washington. The road, as planned, is 3,252 feet long, and will be graded and graveled and will include a timber trestle across the south end of Fairweather Bay in Lake Washington and a landing dock. Approximately 127,000 feet of lumber is required for the trestle and 9,500 feet of piling for the dock. The road is estimated to cost in the neighborhood of \$14,000 to complete.

Vancouver, B. C.—The city council contemplate paying Front St. at a cost of \$8,500. Engineer, C. L. Fellowes.

Orillia, Ont.—Town council has retained James, Loudon & Hertzberg, Ltd., consulting engineers of Toronto, to make a road survey of the town preparatory to the letting of contracts for some five miles of pavement next year.

BIDS RECEIVED AND CONTRACTS AWARDED.

(*Indicates Contracts Awarded.)

Portland, Ore.—Proposals received by the county commissioners, Dec. 4, for the construction of county highways were as follows: Canyon road, section "B," Warren Construction Co.; excavation, 500 yards, intd., \$150, \$750; 5,000 lineal feet shoulders, 6½c., \$325; 5,000 yards No. 1 cement concrete, crushed rock, \$2.70, \$13,800; No. 2 cement concrete, \$2.57, \$12,650. United Contracting Co.; excavation intd., \$1.49, \$745; shoulders, 7c., \$350; No. 1 concrete, \$2.73, \$13,650; No. 2 concrete, \$2.50, \$12,500. Canyon road, section "A," Warren Construction Co.; 8,000 lineal feet shoulders, 6½c., \$520; 8,000 yards asphalt concrete No. 1, \$1.49, \$11,920; using gravel, \$1.46, \$11,680; maintenance, \$59.60 per year. Columbia Blvd., Warren Construction Co.; 200 feet shoulders, 6½c., \$130; 1,390 yards asphalt concrete No. 1, crushed rock, \$1.58, \$2,196.20; gravel, \$1.55, \$2,154; maintenance, \$10.98. Base line, from 63d St. to city boundary, Warren Construction Co.; 17,564 yards asphalt concrete on crushed rock, \$1.49, \$26,170; gravel, \$1.46, \$25,643.44; maintenance, \$0.0745 per yard.

Crandon, Wis.—*W. M. Sherlock, Crandon, for road and grading, reinforce concrete, 600 yards, 18-ft. roadway. H. Nelson, Rhinelander, engineer.

SEWERAGE.

Tusculum, Ala.—City has sold to Slater & Co., of Dayton, O., sewer bonds to the amount \$240,000. John Sherrod, mayor.

Clinton, Ia.—In the construction sewer in Harrison St., 130 ft. from manhole, petition has been presented. Geo. Chatterton, city clerk.

Minneapolis, Minn.—See "Streets and Roads."

Niagara Falls, N. Y.—Hornblower & Weeks, New York, successful bidders for an issue sewer bonds, \$26,500. Edwin J. Fort, city manager.

Yonkers, N. Y.—Authorization was given by the Board of Aldermen for the construction of an extension to the Herriot St. sewer under a revised plan submitted by City Engineer Griffith.

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15 inches—2.20 an inch
30 inches—2.10 an inch
98 inches—2.00 an inch

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1—7x10 Laidlaw DCDD, with boiler.....	1,100
1—7x10 Lambert, 3 drum, with boiler.....	1,600
1—8x12 Mundy DCDD, with boiler.....	1,800
1—8x10 Laidlaw, 3 drum, 32" drums, without boiler.....	1,900
With boiler.....	2,300
1—5x8 DCDD Reversible O&S, with vertical engine, without boiler.....	350
With boiler.....	550
1—7x10 Lambert DCDD, with boiler.....	1,100

COMPRESSORS

	Price
1—12x18 Laidlaw-Dunn-Gordon, belt driven, capacity 300'.....	\$750
1—12x18x16 Ingersoll, straight line, steam driven, capacity about 300' at 80 to 100 lbs.....	900
1—Sullivan, 3 stage air, simple steam, capacity 1500' at 80 to 100 lbs.....	2,500
2—14x12 Bury Duplex, belt driven, capacity about 650' at 80 to 80 lbs., each.....	1,000
1—14x16x10x16 Sullivan, 3 stage air, simple steam, capacity 600' at 80 to 100 lbs.....	1,500
1—14x9x10 Bury, 3 stage, belt driven, capacity 350'.....	1,800
1—Ingersoll-Rand Imperial Type XB2, 500'..	2,000

DRAGLINES

	Price
1—Monaghan-Walker steam machine, with 50' boom, 1½ yd. bucket, almost new....	\$7,000
1—Flory outfit engine 10x12 heavy dragline type boiler, firebox 150 lb. pressure; boom, 60'; steel bucket, 2 yd.; new, 1917.....	2,000
1—24 Bucyrus, with 45' boom.....	—

Machinery Warehouse & Sales Co.
791 Old Colony Bldg., Chicago, Illinois

Akron, O.—Preliminary plans for a sewer district to serve what is known as the "Glenwood Ave. district." N. Hill, have been prepared by J. E. Root, of City Engineer Zeisloft's department, and are now in hands of Service Director Morse, the cost estimate of the improvement proposed being \$105,000. The total acreage to be drained reaches 586 ft., while the total length of sewers recommended is 13,420 feet, the size varying from 12 inches to 51 inches. The district to be drained takes in N. Howard St., Chalker Ave., Berwyn St., Mildred Ave., Dayton St., E. Tallmadge Ave., Lookout Ave., Julien Ave. and West Charles St.

Lancaster, O.—See "Streets and Roads."

Tacoma, Wash.—The city will proceed at once with the construction of trunk sewers to serve sections now being built up to accommodate workers in Tacoma's growing industries, it was announced by Mayor C. M. Riddell. The first sewer to be laid will be to connect with the laterals of the Capitol Heights Addition, south of the ball park, which is estimated by City Engineer Manley to cost \$25,000. A sewer to serve the Kenilworth Park Addition and other S. Tacoma sections will be provided for at the earliest possible time. The South Tacoma sewer is now being computed, but will cost in the neighborhood of \$40,000.

La Crosse, Wis.—For the construction section of east and west sewer council included \$20,000 in 1919 budget; one section to be built by Thill-Manning-Whalen Co., La Crosse, \$67,000.

WATER SUPPLY.

Holland, Mich.—Local investors awarded an issue sewer bonds, \$9,279.56. R. Overweg, city clerk.

Minneapolis, Minn.—See "Streets and Roads."

Homer, Neb.—Water extension bonds, \$3,400, offered without success on Sept. 6, will not be on sale again until next spring. J. M. King, village clerk.

Cincinnati, O.—The council is considering the water disposal problem and has taken up the report made by W. C. Folsom, chief sanitary inspector, nearly a year ago.

Astoria, Ore.—A proposed \$500,000 project for the Astoria water supply was approved by State Engineer Cupper. Appropriation of 16 second-feet of water from Big Creek and the construction of a 30-inch pipe line 16½ miles long are contemplated. Construction is not to begin until it is considered that the city needs the extra supply of water.

BIDS RECEIVED AND CONTRACTS AWARDED.

(*Indicates Contracts Awarded.)

Canton, O.—Arnold, Hoff & Co., to furnish the chlorine required by the city water filtration plant during the year 1919. City board of control.

LIGHTING AND POWER.

Akron, O.—Service Director H. S. Morse states that the 1919 program for street lighting calls for the installation of 900 new lights, which will involve an outlay of \$102,000.

FIRE EQUIPMENT.

Youngstown, O.—The National City Co., of New York, successful bidder for the following bonds: City's portion improvement, \$55,000; fire department, \$5,000.

BIDS RECEIVED AND CONTRACTS AWARDED.

(*Indicates Contracts Awarded.)

St. Peter, Minn.—W. S. Nott Co., Second Ave. N. and 3d St., Minneapolis, Ford chassis, 35-gal. chemical tank with 200-ft. hose capacity; 750 ft. 2½-in. fire hose. J. N. Johnson & Co., 1018 Nicollet Ave., Minneapolis, Ford chassis, 40-gal. chemical tank, 150-ft. hose and capacity for 1,000 ft. fire hose. Reo chassis, 35 h. p. engine. Waterous Engine Co., 80 E. Fillmore Ave., St. Paul, Ford chassis. Bidders for fire truck and chemical engine.

Upper Sandusky, O.—The Eureka Fire Hose Co., Columbus, for 450 ft. of fire hose. Village council.

BRIDGES.

Minneapolis, Minn.—See "Streets and Roads."

Willoughby, O.—In all probability the proposition to issue bonds for the purpose of building a high-level bridge across the Chagrin river at Willoughby again will be submitted to the voters of Lake county in the immediate future.

Milwaukee, Wis.—Milwaukee county considering reinforced concrete bridge, Calumet road, Fox Point, Milwaukee, \$85,000. C. R. Weymouth, Stephenson Bldg., Milwaukee.

Port Stanley, Ont.—City council having engineers, J. A. Bell & Son, C.E., Court House, St. Thomas, prepare plans for the construction of a swing bridge.

BIDS RECEIVED AND CONTRACTS AWARDED.

(*Indicates Contracts Awarded.)

Manitowoc, Wis.—Rideout Co., Oshkosh, Wis., for steel gates for bridges, \$4,500.

Milwaukee, Wis.—Great Lakes Dredge & Dock Co., 491 Canal St., Milwaukee, for repairing timbers on 14 bridges, \$17,470. Board of public works.

Montreal, Que.—Phoenix Bridge and Iron Works, Ltd., 83 Colborne St., for the construction of steel bridge, \$7,500. By the Dominion Linseed Oil Co., Ltd.

MISCELLANEOUS.

Pittsfield, Mass.—The successful bidder for the 6-months' loan, \$200,000, was the Commonwealth Trust Co., of Boston. F. M. Platt, city treasurer.

Newark, N. J.—Board of freeholders will be asked to authorize the purchase of five snow plows at an aggregate cost of \$1,000, to be used attached to motor trucks. County Engineer Reimer.

Niagara Falls, N. Y.—Municipal Bldg., \$15,000 bonds; park, \$13,500 bonds, were purchased by Geo. B. Gibbons & Co., New York. Edwin J. Fort, city manager.

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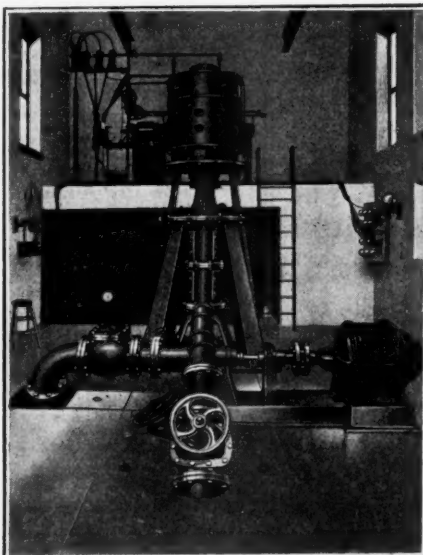
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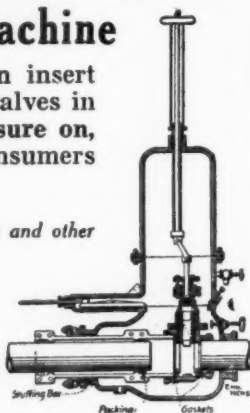
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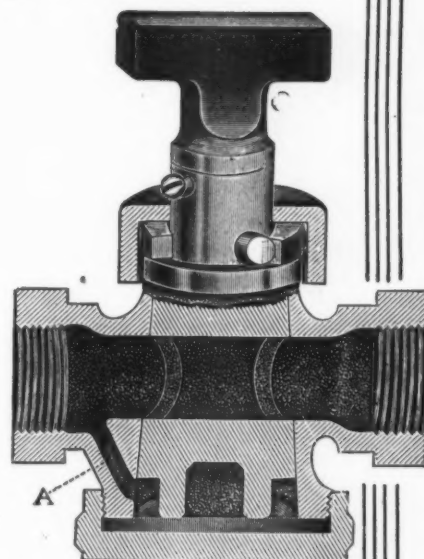
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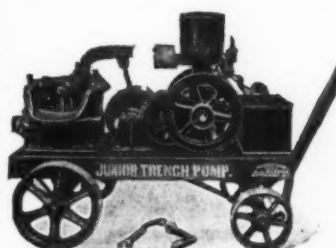


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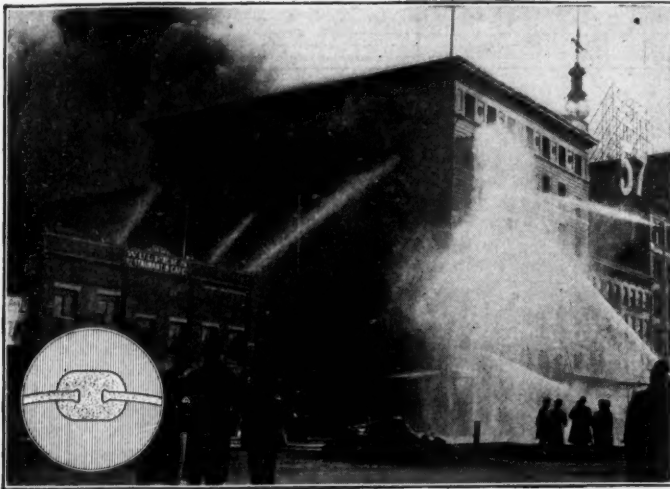
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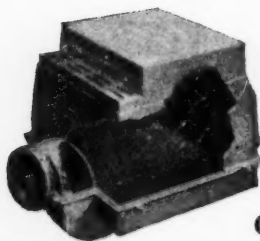
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The smooth interior of Lock-Bar Pipe means lower frictional resistance, consequently greater carrying

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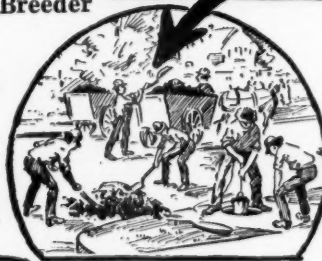


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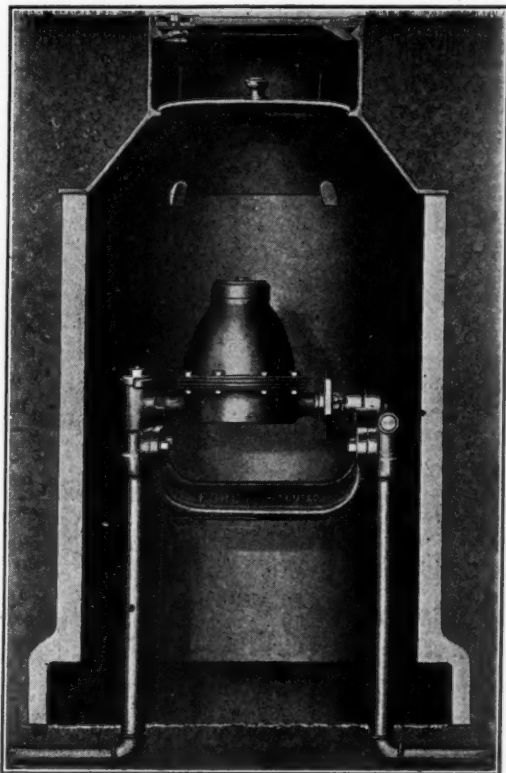
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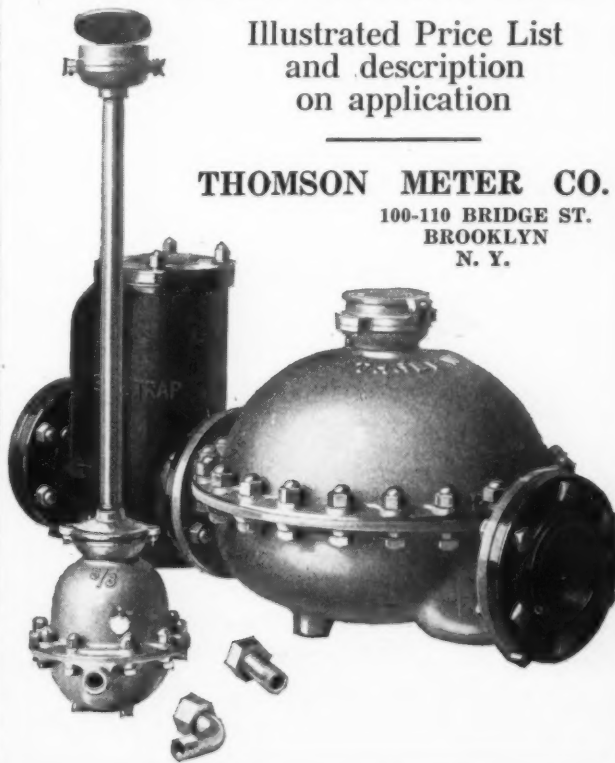
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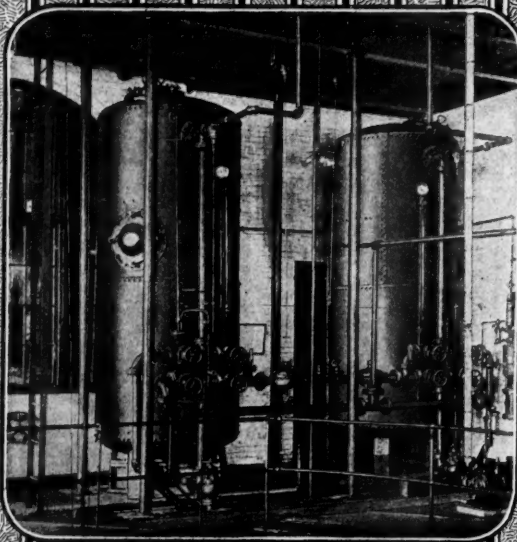
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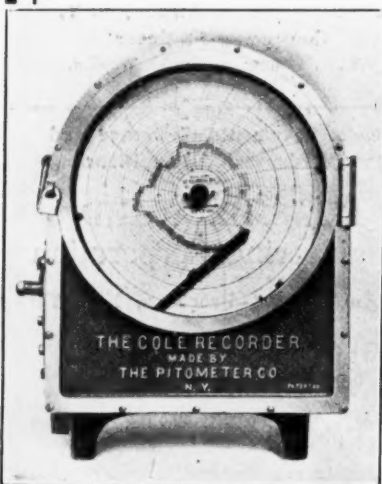
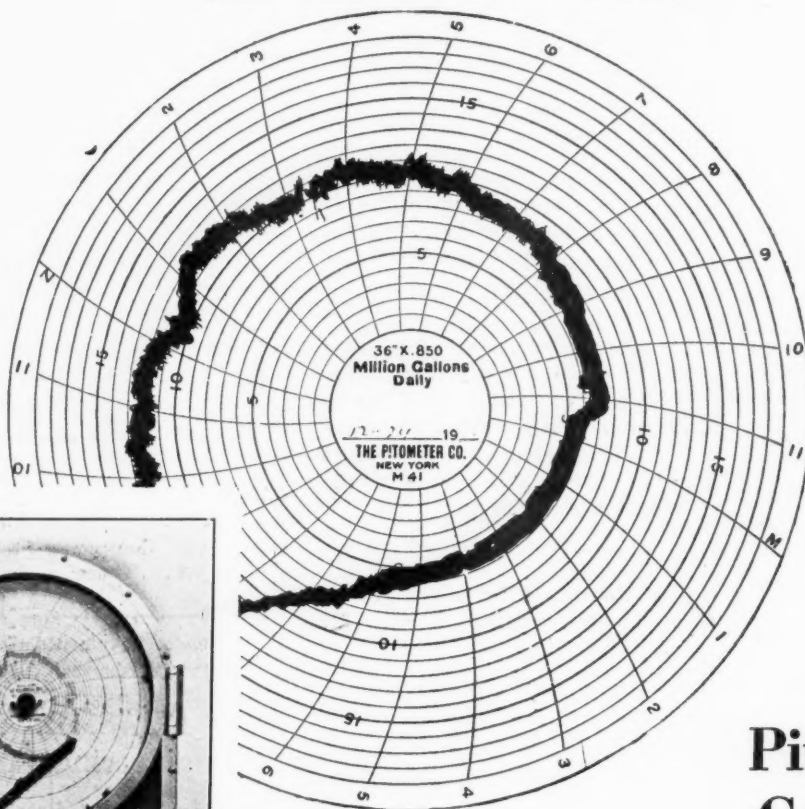
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